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RICHARD H. HUTCHINGS, M. D., Editor

CLARENCE O. CHENEY, M. D., Associate Editor

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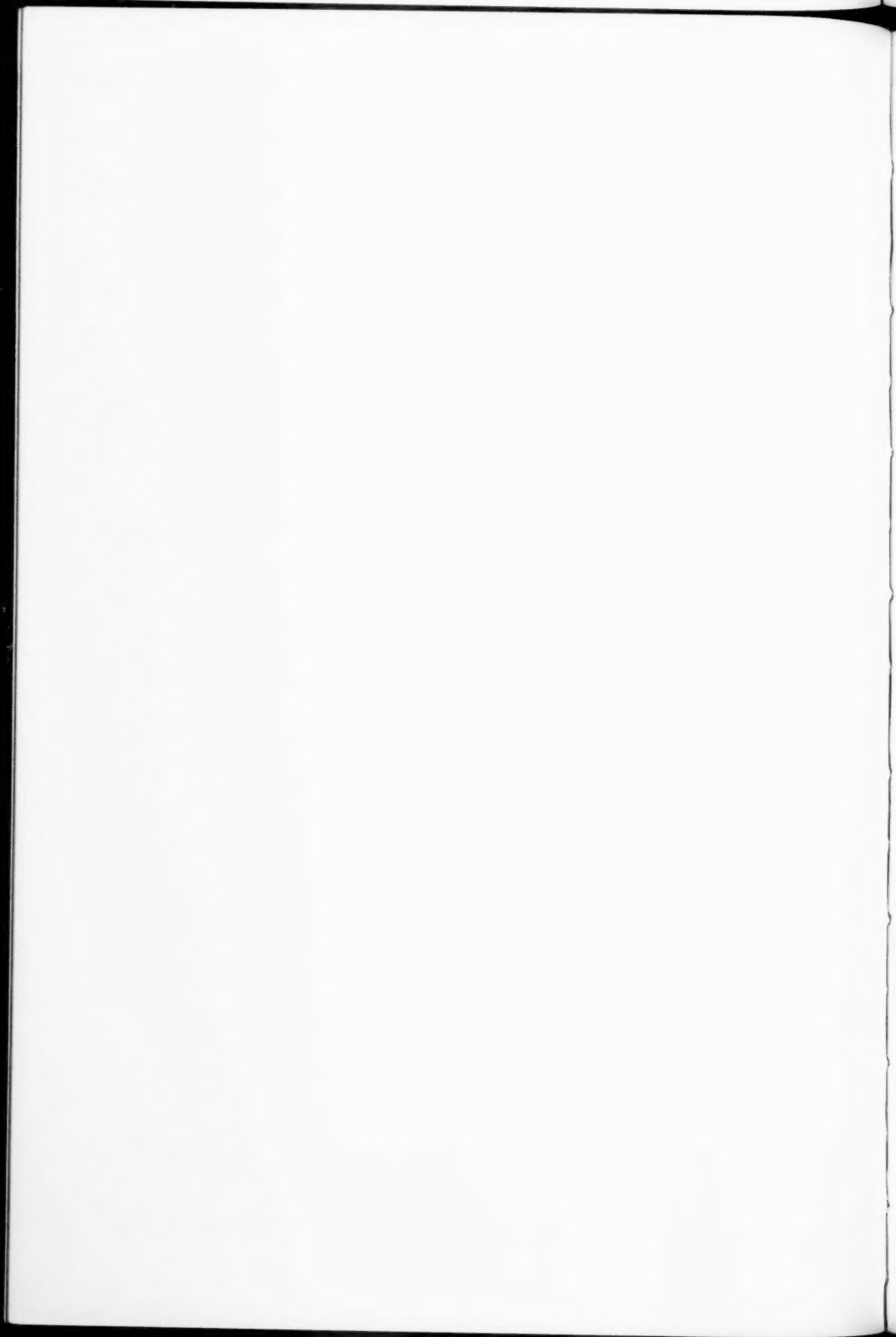
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MACROSCOPIC STAINING OF THE BRAIN*

An Aid in the Visual Teaching of Normal and Morbid Neuroanatomy

BY FRANK M. KRAMER,
NEW YORK CITY

In the preparation of gross brain material for teaching demonstration one becomes conscious of the desirability of a method by which certain structures and configurations of the organ can be more vividly seen. This is particularly true under circumstances where old material, affected by prolonged immersion in a preserving fluid, is used. Even in the more freshly-fixed specimen it is not always without difficulty that the student can trace out all of the delineations of certain internal structures, since some of these parts may have assumed, as a result of the fixation, a color similar to that of their adjacent tissues. For this reason a method for obtaining sharp demarcation between certain elements and their surrounding structures is of value in giving the student a better perception of the gross morphology of the brain. Such a method, as is found in various types of macroscopic staining, consists essentially of the coloration of either the gray or the white matter so that these components become better differentiated from each other than they appear in the ordinary unstained fixed brain. Such coloration, therefore, involves primarily the staining of the cut surfaces of gross sections of brain. However, some methods may be used, as will be described herein, to aid in the demonstration of gyri and other areas on the external aspect of the organ.

For the usual anatomical preparations we have essentially only structural items to consider in macroscopic staining, but in neuropathological material it is frequently desirable to show certain histochemical substances as well as possible abnormalities of anatomical arrangement. Such substances, the products of degenerative or neoplastic processes, are not discernible grossly without specific or selective staining. The desirability, therefore, of methods for staining the brain and its histochemical products for gross demonstration is obviously great.

*From the department of neuropathology, New York State Psychiatric Institute and Hospital, New York City.

Heretofore, a number of methods have been suggested for the macroscopic coloration of the brain. Many authors favor the differentiation obtained between the gray and white matters by the reaction of certain chemicals on the iron content of the brain. Another group of methods consists of somewhat similar processes in which certain chemicals, particularly iron, are applied to the brain, and a color reaction brought about by subsequent immersion of the specimen in another reagent which combines the two chemicals. An instance of this type of method is the change obtained by the reaction of an iron solution with tannic acid, in which the coloration obtained affects the gray matter primarily. A further means of accomplishing macroscopic staining is through the use of biological dyestuffs. Thus we have several groups under which gross staining is performed, the different methods being merely variations or modifications of the same principles of each group.

Practically all the methods described by the various authors have some usefulness in ordinary normal anatomical work, but few have proven of worth when they are applied to the staining of pathological material. While good differentiation between the gray and white matters may be had with most of the methods recorded in the literature, many of them present certain disadvantages such as lack of permanency and time-consuming technique, so that such methods as are practical for ordinary use are really few in number. With essential details, and with some critical analysis, the methods recorded in the literature are reviewed hereinafter, and several suggestions, modifications and new methods pertaining to macroscopic coloration of the brain are included.

In processing specimens by any of the methods to be described certain steps of technical procedure common to all of the methods should be observed. It should be remembered that the coloration or staining involves only the surface of the specimen, and that carelessness in handling the material through the various steps may result in the production of artefacts. Therefore, due care should be exercised in transferring the sections from one solution to another, avoiding contact by the fingers or forceps with the surface to be stained. I have found that a wide spatula made from pyroxylin or

celluloid serves very well as a section lifter, and incidentally prevents undesirable staining of the fingers.

Regarding fixation of material to be stained, formalin as is ordinarily used for brain specimens was found to be best. Results with Kaiserling fixation varied, but in some instances it afforded excellent staining. On account of the extracting action of alcohol on brain material, and the marked shrinkage of the specimen following the use of this fixative, it is not to be recommended for the purposes under discussion. For preservation of stained material, I believe that weak formalin serves as well as any of the fluids used for mounting specimens.

The Gross Iron Stain

As mentioned before, the chemical conversion of the iron in the brain into a coloration has been used as a means to differentiate the gray from the white matter. Several standard methods by which the reaction is obtained have been recorded by numerous authors, many of whom apparently claimed originality. Some writers suggest slight modifications, but essentially the gross iron stain is brought about by the conversion of the iron in the brain tissues into either Berlin blue or Turnbull blue. These two methods give similar results in that with each the gray matter assumes a striking greenish-blue color which permits it to be well demarcated from the white substance, the latter not reacting because it does not possess a sufficient quantity of iron to be demonstrated grossly. The Turnbull reaction, while superior for microscopic detection of iron in the brain, does not give as good a quality of sharpness and permanency in macroscopic staining as does the Berlin blue method. The former reaction is brought about by immersing the gross section in a concentrated solution of ammonium hydrosulfide until the gray matter assumes the desired coloration. Some workers use a subsequent solution of weak hydrochloric acid to develop the reaction to a better degree of sharpness, but the one solution is sufficient to obtain a coloration of the gray matter. The more suitable method, that of the production of Berlin blue, is brought about by processing the section in a solution of ferrocyanide of potassium; it is then rinsed with distilled water, and placed in a weak solution

of hydrochloric acid until the desired reaction takes place. With this method the gray matter likewise becomes differentiated from the white substance (Figure 1), the former appearing stained a greenish-blue color. These reactions, and others, are discussed in a lengthy review by Hernandez¹ who recorded an extensive bibliography on the subject of iron in the brain.

The macroscopic iron reaction used as an aid for anatomical differentiation has its advantages in that it is easily and quickly performed. The best results, as reported by most authors, are secured on fresh, unfixed material. However, if the specimen is subsequently fixed for the purpose of preserving or mounting it, considerable distortion of the material takes place. The results on formalin- and alcohol-fixed material are variable, rather poor reactions being had with old specimens. For these reasons consistent results are not to be expected with all material. A number of authors have used both of the reactions mentioned for the determination of pathological increases of iron in certain cases. It is rather obvious, in view of the inconsistency of the results due to the age and previous preparation of the specimen, that such procedures are not of appreciable value when observed in gross specimens that have been previously fixed. On the other hand, it is probable that in fresh material containing an increase of iron deposits one will obtain a more intense coloration than is seen in normal cases.

Specimens prepared with the gross iron stain are not, as previously stated, permanently stained. Within a few weeks' time the coloration diffuses throughout the entire specimen, the intensity of the reaction in the gray matter becomes lessened, and in time the differentiation almost completely disappears. While the reactions last, specimens stained by both the Berlin and Turnbull blue methods may be preserved in any of the fluids ordinarily used for museum material.

Chemical Coloration.

It is interesting to observe that the cortex and other masses of gray matter in the brain possess a peculiar affinity for certain chemicals. In the gross iron stain as previously described the coloration involves the gray matter because this substance is richer in iron



Figure 1. Horizontal section of hemisphere showing differentiation obtained between the gray and white matters by macroscopic stain for iron in the brain. (Berlin blue method.)

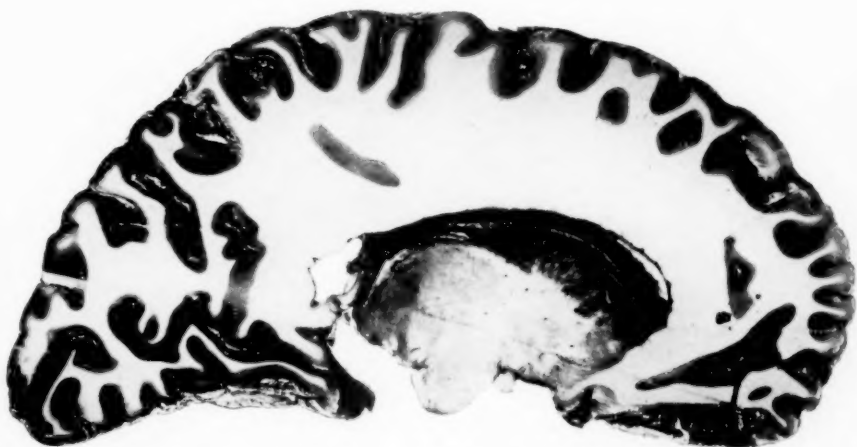


Figure 2. Sagittal section of brain revealing the coloration afforded by applying the Berlin blue method after processing the section in an iron solution. (Landau's method.)

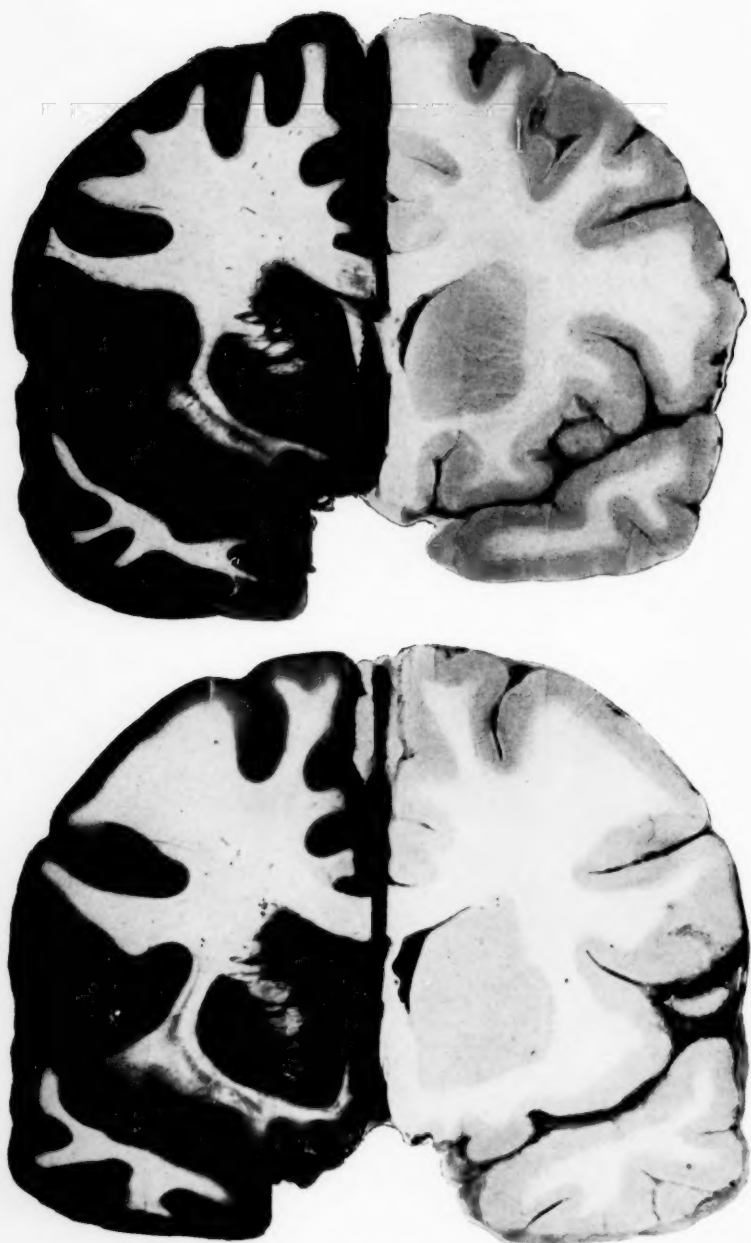


Figure 3. Sections of hemisphere showing comparison of results in macroscopic coloration by the iron-tannate method of Mulligan with the unstained specimens which are on the right. The upper section was processed according to Mulligan's technique; the lower one was processed with a reversal of the treatments in iron and tannic acid solutions.

content than the white marrow. While the gross iron reaction is basically a chemical process in which a reagent is permitted to combine with the iron normally present in the brain, it is possible, by applying certain reagents to the specimen, to deposit additional chemical substances, and through the presence of such added material various color phenomena can be obtained. The differentiation is made possible because the cortex is affected, in most cases, without similar involvement of the white matter by the particular chemical used. In other words, we observe that most reagents affect predominantly the gray matter, making very little change in the white substance. For instance, if we immerse a section in a concentrated solution of ferric ammonium sulfate, we notice that the gray matter becomes darkened and more vividly demarcated from the other structures. Likewise, we notice the predilection that certain dyes have for the cortex. Such affinity of the gray matter for certain chemicals permits one to devise many methods of differentiating the gray from the white matter through the use of the coloration produced by the combination of two or more chemical substances. Utilizing the principle of this type of coloration phenomenon, Landau² was able to obtain rather sharp demarcation between the gray and white matters in applying additional iron to the brain by immersing the section in a ferric solution, and then subsequently treating the specimen with potassium ferro-cyanide to the extent of obtaining a blue differentiation of the cortex and other gray matter (Figure 2). Such coloration is the result of the chemical production of Berlin blue. This same author mentions a similar differentiation by a red color following the use of potassium rhodanate, but coloration through the use of this reagent did not last sufficiently long to warrant its recommendation for ordinary purposes.

Seven years after Landau reported the staining of gross sections of brain by chemical coloration, Sincke³ wrote of an almost identical method with which the gray matter was differentiated by the Berlin blue process. Because of the locality in which Sincke did his work it was necessary for him to recommend the use of distilled water in making up the reagent solutions, since abundant chemical deposits in the tap water interfered with the reaction.

Mainland,⁴ however, obtained excellent results with Sincke's method utilizing tap water in all stages of the process, and he further modified the method with advantages in time-saving, in obtaining sharper differentiation, and in more permanent retention of the reaction in preserved specimens.

Although Landau and the others who did similar work specify the use of ferric chloride solution for their methods, results equally as satisfactory may be obtained by processing the specimen in a solution of almost any iron salt. I have secured very similar results by substituting for the ferric chloride such substances as ferrous chloride, iron iodide, ferric lactate or sulfate, iron ammonium sulfate, etc.; no one of these apparently having mentionable advantage over the others.

As stated before, the chemical coloration produced by the method first described by Landau imparts an intense blue stain to the gray matter, but, although the differentiation is very pronounced, the white matter also assumes a pale bluish tint. Together with another type of chemical coloration, Mulligan⁵ reported a method of overcoming this staining of the white matter by first dissolving out some of the lipoids of the white substance with a phenol-copper-acid mixture. Such a process leaves a protective coating on the white matter and thus inhibits the action of the chemical coloration from affecting parts other than the gray matter. The second part of Mulligan's method involved the use of an iron solution followed by one of tannic acid; the gray matter in sections so treated assumed an intense black color because of the reaction of these two chemical substances (Figure 3). This method is a most desirable one insofar as results are concerned. It is unfortunate, however, that the process requires such a length of time to carry out.

Green⁶ modified Mulligan's method by eliminating the use of distilled water in the reagents, omitting certain steps in the process which he found unnecessary, and modifying the treatment of the section in the phenol mixture; thus permitting a more rapid and economical technique.

Quite recently, Le Masurier⁷ announced a method of macroscopic staining of the brain, combining the phenol processing method as used by Mulligan and Green with the Berlin blue chemical reaction

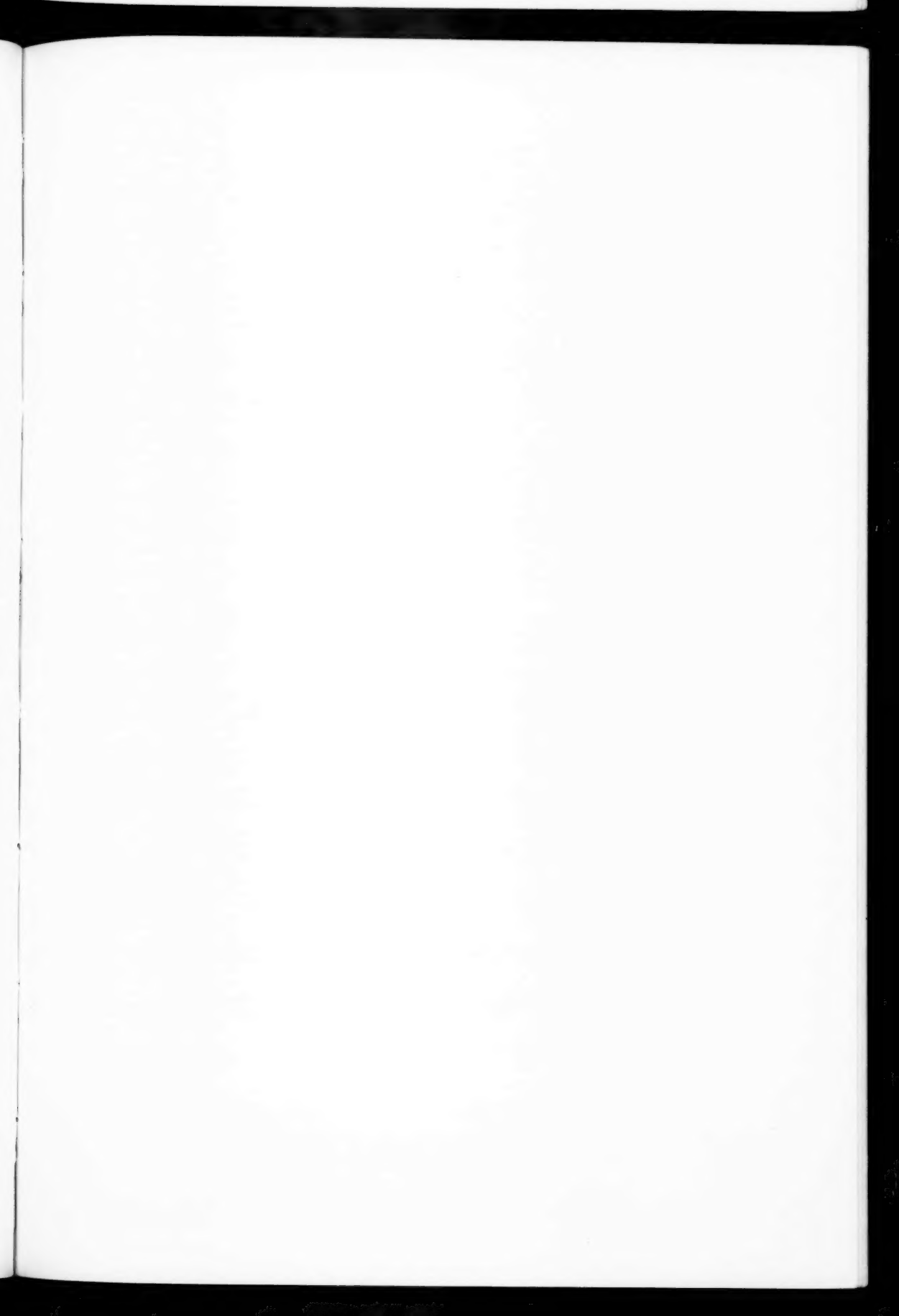




Figure 4. Differentiation afforded by the cobalt-sulphide method of Blair, *et. al.* Other methods of these authors give similar results.

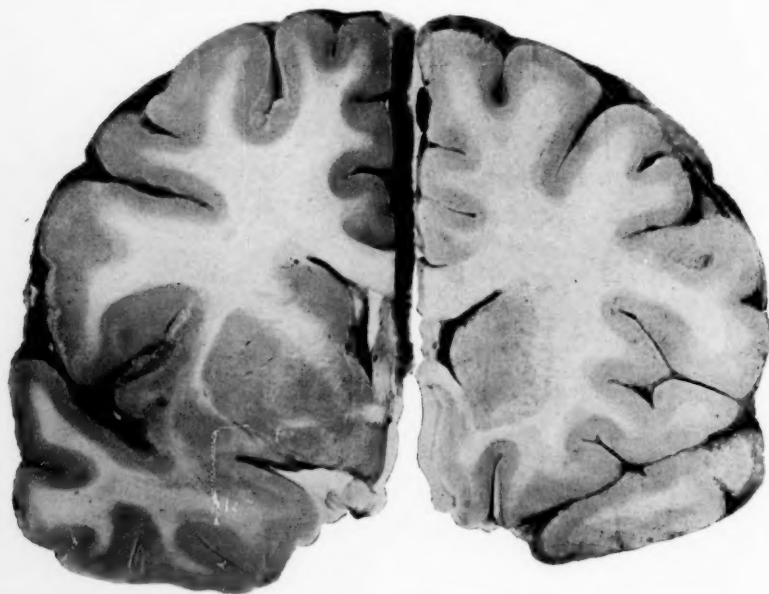


Figure 5. Two sections from the same hemisphere; the left was processed for several minutes in a concentrated solution of ferric ammonium sulphate, and then washed. No other treatment was employed. Note the darkening of the gray matter in the processed section as compared to the appearance of the untreated section on the right.

as devised by Landau and Sinke. His results were satisfactory, not only for normal differentiation of the brain's structures, but for the coloration of certain pathological processes as well. He observed that lesions of the white matter, such as areas of degeneration and certain tumors, reacted to the coloration in the same fashion as did the gray matter. While the method is selective for demyelinating lesions of the white matter, it does not permit the demonstration of other and more characteristic qualities of the lesions, such as fat, etc. It does, however, give one a more accurate picture of the extent of lesions in cases where the areas of involvement and the normal white matter offer, unstained, no demarcation discernible to the naked eye.

Blair and his associates,⁸ in a worthy article, discuss the nature of the chemical bases for staining the brain macroscopically, and they present five additional means by which differentiation may be had. Their methods produce staining of the gray matter in various colors; respectively: (a) grayish-brown, (b) brown, (c) orange, (d) purple, and (e) canary yellow. While the methods of these authors give a certain degree of differentiation between the gray and white matters (Figure 4), the end results are not as sharp as those afforded by other methods, and the sections do not retain their coloration for long when preserved in ordinary fashion. Moreover, some of their methods involve the use of sulfides which are objectionable under ordinary conditions. In another paper⁹ these authors suggest an excellent means of preserving stained gross sections by an impregnation process with which the specimens are paraffinated and dryly preserved. Although the necessary dehydrating and clearing processes of this method lessen the intensity of the staining, the sections are more readily handled by the student.

Insofar as chemical coloration is concerned, I do not believe that the few methods described in the literature reveal more than a small percentage of what may be accomplished for the purpose with other chemical combinations. In other words, since the gray matter possesses an affinity for most chemicals, a worker with a knowledge of the color phenomena obtainable by the mixture of various chemical reagents could devise any number of means for producing colored differentiation of the gray matter. Grekov and

Ter-Gerorkov,¹⁰ for example, obtained results in using a mixture of cobalt chloride, copper sulfate and magnesium chloride in which they processed the gross section; they subsequently treated the material with a solution of potassium ferrocyanide. The work of these authors, of Blair and his coworkers, and others, indicates to a considerable extent that the possibilities of staining the brain in various colors by various combinations of chemicals are very numerous and profound. If one can apply additional iron to the brain and subsequently convert it into a blue coloration, why cannot one utilize other chemical substances to a similar purpose? I have been able to produce intense coloration by first depositing calcium in the tissues (by treating the sections with calcium chloride followed by sodium phosphate) and then staining the specimen with an alizarin dye which has some specificity for calcium. Such a method, however, is not practical because it is time-consuming, but it at least illustrates again the possibilities afforded by chemical mixtures applied to the purpose of obtaining differentiation.

The reason for such an affinity or predilection of the gray matter to certain chemicals is not fully understood. Mainland advances the theory that the difference in texture between the gray and white matters is responsible; that the lipoid character of the white substance does not permit the solutions to affect this portion of the brain as readily as they penetrate the gray matter. He mentions the possibility that the effect may be physiochemical in nature, since he observed that the reaction was influenced to advantage by the presence of formalin in the sections from the fixation. Blair and his associates believe the reaction to be the result of purely physical factors; they have shown that the reaction affects an abraded area in the white matter in the same fashion as it affects the gray substance. Mulligan's method reveals that the difference in texture between the gray and white matters must have some bearing on the phenomenon, since the white matter in his specimens did not react at all to the coloration after having been treated with a phenol solvent of the lipoids. Then again we observe better results by less involvement of the white substance with the staining if we have a smooth, evenly-cut surface on the specimen, and if we re-harden and thereby emphasize the smoothness of the cut surface

by refixation with formalin. That the texture of the white matter has an influence on the enhancement of its own staining is clearly shown by the fact that demyelinated areas will assume the coloration very rapidly.

Since the purpose in view in macroscopic staining of the brain is that of differentiation, it becomes a matter of personal preference to select any particular type of method. For usual anatomical work, it scarcely matters whether one stains the cortex black or a vivid pink, providing the desired differentiation is attained. In demonstrating pathological material in which it is desired to show certain histochemical substances, one has to select a method which affords some specificity for the substance to be shown, regardless of the resulting color. In either case there is ever present the desirability of rapid and simple technical procedures. Personally, I prefer a method with which anatomical differentiation is attained by nothing more than an appreciable color emphasis of the gray matter, since I believe that more details are observable in a section that is differentiated by slight tinting than are seen under circumstances where the gray matter is stained an intense blue or black color. With the color of the gray matter emphasized only by sufficient staining to bring out the differentiation there is less apt to be any misinterpretation on the part of the student. Such pale staining or slight exaggeration of the color of the gray matter can be accomplished by several simple methods. If one merely exposes the cut surface of a brain to a current of air for a short time, the gradual drying of the specimen will reveal a more pronounced demarcation between the gray and white matters than is seen in untreated sections. If a cross section with such a slightly dried surface be returned to its preserving fluid it will be noticed that the additional differentiation caused by the drying will be retained for years. Some chemicals have similar effect; as mentioned before, immersion of a specimen in a concentrated solution of iron ammonium sulfate will cause the gray matter to become darkened and better differentiated from the white substance (Figure 5), without any further treatment. Specimens so treated retain the darkened appearance of the gray matter for a surprisingly long time.

In my experience, one of the major disadvantages of the methods described by the various authors is the lack of control in the staining. With Landau's method, for example, the coloration takes place so rapidly that the specimen is scarcely put in the second solution before it has assumed a deep coloration, and the chances of overstaining are frequently encountered. It is true that sections stained by the Berlin blue method may be decolorized with ammonia, and restained; that the color in material treated by Mulligan's iron-tannate method may be removed with dilute hydrochloric acid, but the necessity of such steps, and the poor control over the intensity of the staining reactions constitute techniques which are not altogether desirable because they lack simplicity, and because they are time-consuming. With most of the methods one has to depend considerably on the concentration of the reagent solutions, and on the time of processing in order to acquire some control over the intensity of the reaction. For this reason, it is my belief that a method in which the reaction takes place slowly without the danger of overstaining is the most desirable one for ordinary work. In one instance I have found that the order in which the specimen is processed has some influence on the staining reaction. With Mulligan's iron-tannate method, I have observed that softer, and to my opinion, more desirable coloration is secured if the specimen is treated with the iron solution first and then developed with the tannic acid (Figure 3).

While discussing chemical coloration, I wish to reveal the results obtained in macroscopic staining with a reagent used and recently described by Humphrey¹¹ for the detection of iron in microscopic sections. The reagent is dinitrosoresorcinol; it has a remarkable specificity for iron. I have not had any good results in applying it as a gross stain for the normal iron in the brain, but it imparts a beautiful differentiation if the specimen is first treated with an iron solution (Figure 6). The reaction takes place slowly, so that the degree of staining can be very easily controlled. Depending on the concentration of the iron solution, and on the length of time the specimen is processed in both it and the dinitrosoresorcinol solution, one can obtain a coloration of desired intensity. The shorter length of time affords a pale, olive-green staining of the gray mat-



Figure 6. Sagittal sections of cerebellum; the left was stained with dinitrosoresorcinol after being processed in an iron solution. The section on the right is untreated formalin-fixed material from the same specimen for comparison.

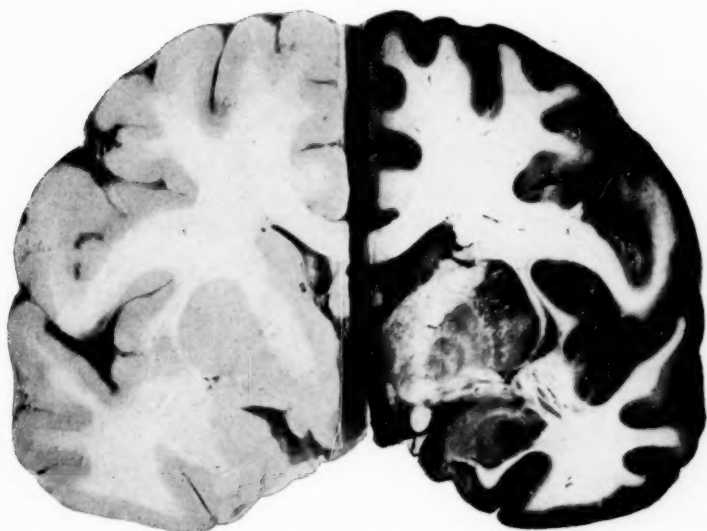


Figure 7. Cross section of hemisphere stained by the nigrosine method, compared with an adjacent and untreated section from the same specimen.

ter, but more liberal use of the reagents will bring about an intensely dark greenish-blue coloration. To my mind, the paler type of reaction is preferable, since it gives good differentiation and is lasting. The specimen may first be treated by Mulligan's phenol mixture to prevent the reaction from affecting the white matter and to give sharper contrast, but good results have been obtained by me on formalin-fixed material that had no previous treatment except a short rinsing under tap water. Overstaining is not apt to occur, but in the event that it does the intensity of the stain may be lessened with a strong solution of hydrochloric acid.

All of the methods described in the foregoing paragraphs are ones which essentially color or stain the gray matter. The reverse type of staining, that of procuring coloration of the white substance with a relative absence of staining of the cortex, can be done. It does not offer, however, any advantages over the other types. While the most selective staining of the white matter which we obtain in microscopic work is comparatively easy to perform, the usual myelin sheath stains do not work so well when they are applied to gross sections. The reason for this is probably that the penetrating character of the dyes used for myelin sheath stains causes invasion of a gross section diffusely to such a depth below the surface that differentiation becomes difficult. After extensive efforts, I have been unable to obtain satisfactory results on applying the methods of Spielmeyer and Weigert to macroscopic sections. It was observed, however, that in applying a solution of osmic acid to a section previously treated with potassium dichromate the white matter assumed a black stain which contrasted with the unstained cortex. Such a method is not as good a means for the usual differentiation as are other methods, and it is rather expensive considering the cost of osmic acid. The reaction, however, throws some additional light on the nature of macroscopic chemical coloration, since here we have a substance which has an affinity for the fat-like material of the white matter, thus indicating that the reaction of chemicals in macroscopic staining depends essentially on the physiochemical character of the different parts of the brain. This fact is again illustrated by the method of Tortella,¹² who succeeded in obtaining selective staining of the myelin in gross sections of

brain with Hortega's silver-carbonate process. His method is not practical, however, since it requires the use of chemically clean glassware and utensils; this being considerable extra work, and not permitting the method to be classed as a desirable one for ordinary use. Moreover, the possibilities of irregularity in the coloration are many. Sections prepared by Tortella's technique show a coloration of all of the myelinated zones, but I have not found it of particular value in the gross demonstration of demyelinated areas in the white matter.

Chemical coloration by the use of silver is of great value when demonstrating pathological deposits of calcium in the gross section of brain. Usually, calcareous deposits cannot be visually differentiated in the untreated specimen, but Kesten¹³ suggested a silver method which, when applied to macroscopic brain material containing calcium deposits, gave excellent results. It was found to be of particular value in demonstrating psammomatous bodies which were present in certain brain tumors. The method stained the calcium intensely black, while other tissues and structures were essentially unaffected. The method does not, however, produce differentiation between the gray and white matters, and therefore it is of no use for such a purpose.

In summing up the merits of chemical coloration as a means for differentiating gross structures of brain, I would say that some of the methods quoted are of exceptional value for their purposes. It is obvious, insofar as sharpness and permanency are concerned that most of the methods described have a wide advantage over the gross iron reaction in which the normal iron content of the brain is stained by the production of either Berlin or Turnbull blue. But, as mentioned before, methods lacking in simplicity or ease of operation, or methods in which there are constant dangers of overstaining or ruining the specimens, are not to be considered the ideal types for ordinary use when other types of methods afford the same results without such disadvantages.

Staining with Biological Dyes.

The first indication that biological dyes are of value in macroscopic staining of the brain is mentioned by Strasser,¹⁴ who em-

ployed a solution of acid carmine sodium in which he processed the gross sections to obtain a red differentiation of the gray matter. Usually, however, histological dyestuffs are too readily absorbed by both the gray and white matters to be of much value in gross staining. The majority of the more common staining solutions will afford some differentiation in that they stain the gray matter more intensely than they affect the white marrow, but the differentiation is scarcely more evident, commensurately, than is the contrast present in the untreated fixed specimen. The major disadvantage of staining with the usual biological dyes is that almost all such colorations are not permanent; the dye soon dissolves out of the specimen and into the preserving fluid which it colors. Prolonged washing in water after the staining process does not militate against the occurrence of such a disadvantage. Therefore, with several exceptions to be mentioned, the general use of biological dyes is not to be recommended for the purpose of gross staining of the brain. Among these exceptions, however, one particular dye was found to have a remarkable affinity for the gray matter. This dye, which is to be especially recommended for macroscopic staining of the brain, is nigrosine. The stain is sometimes known as aniline black, and is available in both spirit-soluble and water-soluble forms. The former, however, does not give worthwhile results for the purpose under discussion. The dye has been used heretofore in histologic and bacteriologic work as a background stain in microscopic preparations, and because it affords a staining which is tenacious and lasting it is widely used commercially for the coloring of wood, leather and other materials. Applied to the gross staining of the brain it affords an ideal method for the purpose, since it constitutes a means of obtaining the desired coloration rapidly but with utmost control; it permits one to obtain the proper degree of staining without the use of decolorizers, and without the difficulty of complicated technical methods; its "fastness" allows a permanency of the preparation that is not equalled by other methods. When used in an appropriate solution, nigrosine imparts to the gross section a beautiful gray color of the cortex and nuclei (Figure 7); in a more concentrated solution one can secure a more intense staining, or the degree of staining can be controlled

by lengthening the time of processing in a weak solution. The staining solution need not be formulated accurately, since the coloration takes place without so great a rapidity as to interfere with the control of the process. I have found that a 0.5 per cent solution of the dye in distilled water is satisfactory, but good results may be had with weaker or stronger solutions.

Unfortunately, the white matter is in a slight degree affected by the nigrosine; it assumes a slight coloration, but not to such an extent as to interfere with the attainment of good differentiation. The tinting of the white matter can be avoided by previously treating the section with Mulligan's phenol solution, which inhibits the action of the dye on the white matter (Figure 8).

The major advantages of the use of nigrosine in gross staining of the brain include the element of simplicity or ease of operation. One has merely to dip a cross section of brain into a solution of nigrosine, and it will be observed that the gray matter almost immediately reacts by assuming a grayish tint. Further advantages are constituted by the permanency of the preparation, since the staining is not affected by formalin or other ordinary preserving fluids. As a matter of fact, a gross section stained with nigrosine is decolorized with difficulty, the coloration not being affected by the usual decolorizing agents. Weak alcohol does to some extent remove at first the "excess" dye from the stained sections, but afterwards fails to show any appreciable effect on the staining.

The exact nature of the staining reaction with nigrosine is not fully understood by the writer. It is curious that a certain brain will react well to the dye solution when the staining process is applied to a gross formalin-fixed specimen, yet when frozen microscopic sections are taken from the same brain, and treated for the same length of time in the same dye solution, we do not get the same coloration or differentiation. Nor are results obtained from paraffin or celloidin sections. Why nigrosine, as an aniline dye, should have an affinity for the gray matter when other aniline dyes fail to show this characteristic is a most peculiar fact. There arises some indication that the physical texture of the white matter inhibits its own staining when we reveal that areas of demyelination, sclerotic plaques, tumors and artefacts in the white matter react

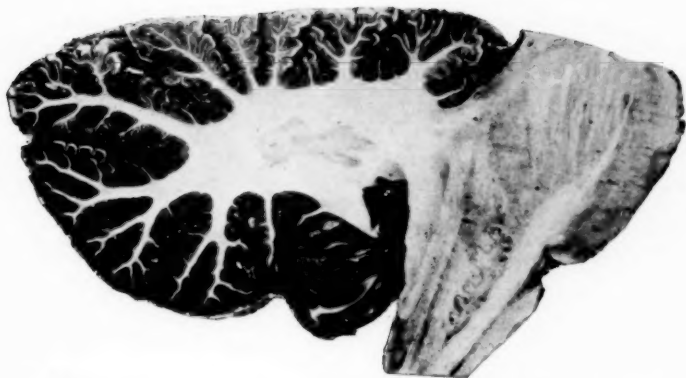


Figure 8. Radial section of cerebellum stained with nigrosine, but previously treated with Mulligan's phenol solution which has inhibited the action of the stain on the white matter.

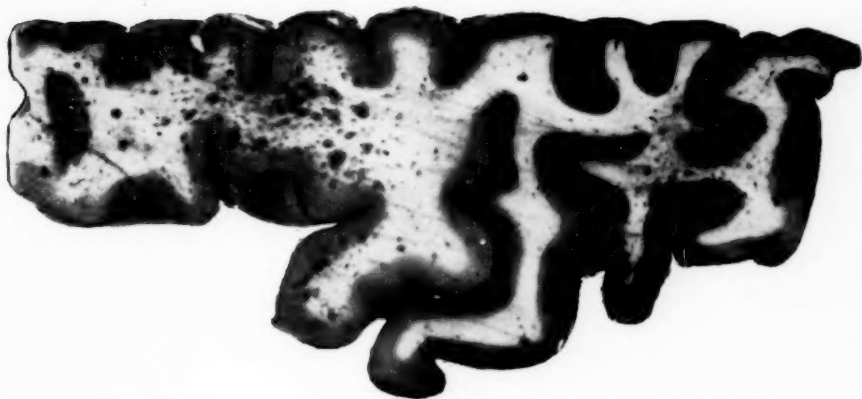


Figure 9. Section of cerebrum from a case of multiple sclerosis, stained with nigrosine. Before staining a good number of the sclerotic plaques, particularly the small ones and those in the cortex, were not discernible in the gross specimen. Short processing in the staining solution, however, colored the areas of degeneration an intense black, so that they became sharply differentiated from the rest of the brain. The gray matter assumed only a deep gray coloration.



Figure 10. Horizontal section of cerebellum showing exceptionally good differentiation between the gray and white matters. (Azolitmin method.)

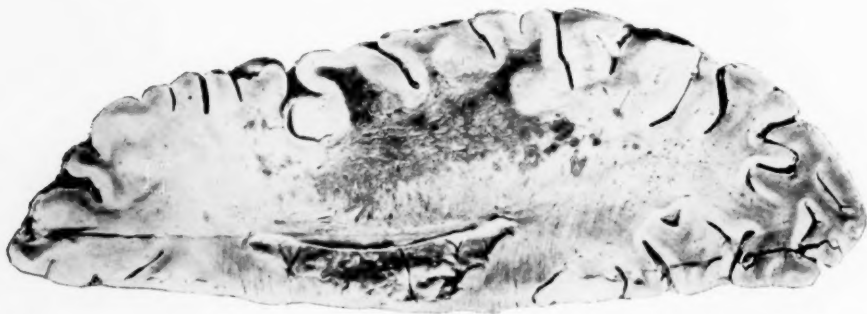


Figure 11. Horizontal sections of cerebrum from a case of acute disseminated sclerosis, stained with Sudan III. The fat-like products of degeneration are stained a red color in the actual specimen, and the quality and distribution of the lesions are better demonstrated than is possible in the unstained material.

quite intensively to the staining with nigrosine (Figure 9). However, I am inclined to believe that there must also be some chemical affinity between the dye and certain components in the brain to account for the phenomenon; this became evident through the results obtained after extensive experimentation with biological dyes as applied to macroscopic staining of the brain. It was observed that certain dyes stained both the gray and white matters with the same degree of intensity, while others reacted primarily on the gray matter with scarcely any effect on the white substance. Moreover, one dye was found to possess, under certain conditions, a predilection for the white marrow, although the coloration was not sufficiently selective for the purpose of differentiation. Such observations make it appear that the reaction of the dye to the brain tissue is brought about by both chemical and physical factors. One trained with a more intimate knowledge of the chemistries of both the brain and the dye might explain the phenomenon.

It is curious to observe that some dyestuffs, which ordinarily do not stain so intensely, and which are not used for histological coloration of cells and structures, give such remarkable results when applied to gross staining of the brain. Of this group I am referring to the use of indicator dyes. Solutions of these dyestuffs, particularly weak ones, do not even stain the fingers, yet they impart to a gross slab of brain a beautiful and lasting demarcation of the gray matter. Some indicator dyes are not as useful as others for the purpose; I have obtained excellent results, however, with several of them. More exactly, my best results were secured with the use of azolitmin which stains the gray matter a soft pink tint, and thus readily and definitely differentiates this part of the brain from the adjacent white matter (Figure 10), providing that the specimen still retains an acidity from the fixative, as is usually the case. The reaction can be developed more intensely by immersing the stained section in a dilute acid. The specimen may be well preserved in formalin to which is added a small amount of acid.

The behavior of indicator dyes in the presence of either acid or alkaline substances is well known. For purposes of differentiation and subsequent preservation of sections stained by indicator dyes one can modify the color reaction of the particular specimen by the

use of either acid or alkaline solutions. As an example, a slice of brain treated with azolitmin shows a pink coloration of the gray matter when the specimen is preserved in an acid medium, but the differentiation becomes blue if the preserving fluid is changed to an alkaline one. Another indicator dye, alizarin red, gives pink coloration in an alkaline solution, but is quickly decolorized in an acid preservative. Specimens stained by indicator dyes have been observed by me to last a surprisingly long time, providing that the preserving fluid is made to a slight extent either acid or alkaline; depending, of course, on the object in view.

Certain biological dyes are useful in the demonstration of fat in the gross specimen of brain. This substance is a pathological product, but it is not present in all diseases of the brain. When it is present it cannot be differentiated by macroscopic inspection unless it is specifically stained. Sudan III and scarlet red are two of the dyes which selectively stain fat, and used in gross staining they color this material intensely red so that its presence and distribution are readily recognized (Figure 11); the uninvolved parts of the brain assume only a slight pinkish tint. The dyes mentioned are not of value for normal differentiation, but acute demyelination and recent arteriosclerotic softenings are specifically stained with the fat stains.

The coloration or staining of macroscopic specimens of brain need not be limited to the differentiation of the gray matter and the white substance in cut sections. If it is desirable to show a certain area or a particular convolution on the external surface of the organ, that portion of the cortex may be stained locally, so that it stands out in contrast with the rest of the specimen. Such localized staining may be accomplished by applying the staining solution directly to the area with a camel's hair brush, after first removing the excess fluid from the specimen by blotting with a piece of cloth or filter paper. Because of its permanent and intense staining powers, nigrosine serves very well for this purpose; if several areas are to be shown in one specimen, they may be stained with different degrees of intensity so that they may be differentiated from one another. Several areas may be stained with as many different colors if one wishes to apply some of the other staining methods men-

tioned previously, but undesirable complications of technique arise, and the variation of the permanency afforded by the different methods does not permit the preparation of lasting specimens. Green, in his paper on macroscopic staining, suggests the use of certain coloring agents by which the sulci of the brain may be identified, not only from an external aspect but on gross cross sections as well.

In conclusion, it might be mentioned that no one method of gross staining will suffice for the proper demonstration of both normal and pathological material. The reason for this fact has been brought out. In anatomical work, the qualities of the staining method should consist of a means to obtain accurate differentiation by a simple and easy process, and the specimens so prepared should possess a coloration that is permanent. Additionally, and in both normal and pathological material, the gross staining method should be one which will not militate against the preparation of satisfactory microscopic tissues if it is desired to subsequently cut blocks from macroscopically colored slabs of brain. It is believed that some of the methods described herein, particularly that in which nigrosine is used, have these qualities, and they are therefore suggested and recommended for the purposes for which they are intended.

SUMMARY

The methods of macroscopic staining of the brain for both normal and pathological demonstration are reviewed; the merits and disadvantages of the methods are discussed, and some modifications of certain methods are suggested. Additionally, several new means by which gross staining of the brain may be accomplished are presented. Among the latter, some emphasis is placed on the use of nigrosine, since this dye permits one to obtain a permanent, selective coloration of the gray matter by a profoundly simple process.

TECHNICAL METHODS

The details of the technical methods of the authors quoted will be found in the original articles.

The gross fat stain is similar to that used in microscopic work; the gross section is washed free of formalin, immersed for several hours in 70 per cent alcohol, and then stained to the desired intens-

ity in a concentrated solution of Sudan III or Sudan IV. It is then thoroughly washed under tap water, and preserved in weak formalin.

The methods suggested by the author follow:

Method Using Dinitrosoresorcinol

1. Wash section under tap water—3 hours.
2. Immerse in 2 per cent aqueous ferric ammonium sulfate—3 minutes.
3. Wash under tap—3 minutes.
4. Differentiate in saturated aqueous solution of dinitrosoresorcinol—1 to 8 hours.
5. Wash under tap—3 hours.
6. Preserve in 5 per cent formalin.

Method Using Nigrosine

1. Wash under tap.
2. Stain in 0.5 per cent solution of water-soluble nigrosine. The time is variable; remove section every few minutes and rinse with tap water, inspect, and return to staining solution if necessary.
3. Rinse thoroughly with tap water.
4. Agitate in 25 per cent alcohol—15 minutes.
5. Wash under running water—1 hour.
6. Mount or preserve in formalin.

Method Using Azolitmin

1. Wash.
2. Process in a weak (0.5 per cent) solution of azolitmin until the gray matter assumes a pink differentiation; the time is variable.
3. Rinse with tap water.
4. Intensify color by immersing section in 1 per cent hydrochloric acid (pink differentiation); or, immerse in weak ammonium hydroxide (blue differentiation).
5. Preserve in acidified or alkalinized formalin solution, depending on the coloration desired.

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AUTOCATHARSIS AS A THERAPEUTIC MEASURE

Report of a Case

BY JAMES A. BRUSSEL, M. D.,

SENIOR ASSISTANT PHYSICIAN, PILGRIM STATE HOSPITAL, BRENTWOOD, N. Y.

To the psychiatrist who subscribes to the principle that ultimate attainment of recovery in his patients lies in the analytical concept of the dynamics of mental disorders, must come the feeling of disappointment and sense of failure in the treatment of the functional psychoses. While psychoanalysis is generally considered to be applicable only in psychoneuroses, the public mental hospital psychiatrist does not have the opportunity of availing himself of this type of treatment because of the greater number of functional psychoses admitted. It is in the latter group that the therapeutic problem lies; and it is to be regretted that psychoanalysis *per se*, according to prevalent opinion, is not only useless, but may be dangerous if applied to the functional psychosis.

Wechsler points out that "a schizophrenia may occasionally be sent galloping along by an analysis, or a suicide be brought on in a manic-depressive patient." Chapman, acknowledging Sullivan's excellent work in the treatment of schizophrenia, simultaneously points out that "Freud himself . . . is far from convinced that psychoanalysis should be used in the psychoses." Herein, then, is a question combined with a challenge. Other than the usual psychotherapeutic methods of the public mental hospital, such as the contact of the patient with the physician, nurse and social worker, with interviews, suggestion, persuasion and encouragement, together with the other therapeutic adjuncts, we might well ask ourselves what other method could be employed in selected cases, after a fashion, on the lines of analysis?

Hinsie states, "Psychotherapy is adequate when it enables the patient who had previously enjoyed good health, to regain his pre-clinical status by complete removal of the clinical symptoms . . . The possible means of accomplishing this in adults are by one or more of several methods, (analysis, synthesis, catharsis, suggestion, education and re-education)."

Before applying analytical therapy to the psychoneurotic, the analyst insists that the patient have a genuine desire to get well, that he be of adult or better than adult intelligence, and within certain age limits. It has always seemed to us that if a psychotic patient could be found with these basic "prerequisites," one of the above-named methods could be adopted for the treatment of that patient. Such an individual was found in the case about to be quoted, in whom autocatharsis was used, following, in general, the technique of the formal analysis.

Briefly, this was the plan: She was given a private room wherein she wrote for two hours a day, five days a week. A bed in this room enabled her to rest whenever she wished to do so. Initially, she was instructed to write leisurely, and to "write without thinking," that is, simply to indite the thoughts as they came to her. Not once during that time (about three months) was she questioned; on Sundays she spent the day receiving visitors who, in turn, had been warned not to talk with the patient about her illness. In the end, she reassembled her material unassisted and, like the psychoanalytic subject, "reviewed the productions." From the very beginning, we had been impressed by her earnest desire to recover, her intelligence, and her willingness to cooperate. The value of such therapy, in a selected case, can be estimated by reviewing the case history, the patient's productions, and the ultimate result.

REPORT OF A CASE

Maria S., Age 42, Married, Housewife

Family history: Negative for mental and nervous diseases for at least two generations.

Personal history: The patient was born in Berlin, Germany, January 18, 1893. Birth, infancy, childhood and adolescence were considered normal. As a child she was considered something of an actress, taking small parts in the Royal Opera, with which her father was affiliated. She did this until the age of 16, when she expressed the wish to become an actress, to which her father objected. She studied chemistry and received the equivalent of two years of American university training. For a time she worked for

the General Electric Company in Germany, but at the outbreak of the World War volunteered for duty as a nurse. She served in base hospitals in Austria and Poland, and after the war she continued her hospital work, first in a general hospital in Hamburg, and later in a tuberculosis institution in Berlin. This brought her close to the family circle again. She was always considered extremely affectionate toward her father, and was quite attached to him, but there was much friction between the patient and her mother.

In 1922 she married in Berlin, and her marital life was considered satisfactory until last year (1935). During this year, the husband states, "We were practically separated." One child resulted from this union, a girl now 11 years of age. There were other pregnancies, all terminated by induced abortion. Menstrual history was normal. There is no history of any serious illness, accidents or injuries. The patient complained, from time to time, of vague physical ailments, and at one time was diagnosed as having a "nervous heart." She was considered quick-tempered, temperamental, very sensitive, inclined to see slights when none were intended; and although sociable in a limited way, she had few friends, being very selective in her associations. She made acquaintances easily, but found it difficult to have real friends. She was interested particularly in music and drama. During the six months prior to admission, she rapidly lost interest in her child, who became, according to the husband, "just one of the surroundings." Previously the patient had been an ardent socialist, but in order to be consistent with some of her ideas, she became a capitalist. She never used alcohol, drugs or tobacco to excess.

Onset of psychosis: Four years ago the patient claimed that a dictaphone was hidden in her apartment. After a time, she became quite irritable and unreasonable. Late in 1934 she said she was "on the air," that she was being watched and persecuted because she was a Wendell, and was to inherit that lady's fortune. She became morose and would not leave the house, stating that she was to get the Eastman fortune, and kept talking about a sort of secret wire which had been placed in the house to spy on her. She expressed the idea that she could communicate by "thought transfer-

ence," read a great deal of psychology and "created" theories of mental telepathy. She said she could "communicate" with Freud, Jung and Adler. She conceived the notion that she was to marry J. Pierrepont Morgan and said his fortune, together with those of Eastman and Wendell, would give her great power, hence she was being persecuted and opposed. She said the "seat of consciousness" was in the *Zwerchfell* (diaphragm), and that here such noted spirits, whom she described as being "fluid" in character, as Chopin, Voltaire, Milton and others, came to sit and talk with her. She both felt and heard them. She became less and less interested in outside activities, began to neglect her housework, and soon became irritable with her child. The slightest provocation excited her; and one morning she became so unmanageable that a policeman was summoned who called a Bellevue Hospital ambulance.

At Bellevue Hospital: Admitted November 9, 1935. The same history as outlined above was given by the husband. Physical examination was essentially negative. The patient was tense, agitated, fearful, expressed ideas of influence, reference and persecution as described, and voiced delusions of somatic content as well as ideas of grandeur. She admitted auditory hallucinations.

At Pilgrim State Hospital: Admitted November 15, 1935, on a regular order of commitment. Physical, gynecological, urine, blood Wassermann examinations and genital smear were all negative. The patient was quiet, compliant and well behaved. Stream of mental activity showed no disorder, but the patient was rather suspicious, worried and anxious. She frankly related, however, a chronological story of herself, centering her suspicions on a political group that was spying on her with a secret wire and dictaphone, as were various psychologists such as Adler, newspaper writers such as Heywood Broun, and editors who wrote significant and persecutory items about her in the newspapers. She felt that certain friends of hers were likewise persecuting her, although she was aware that they were in California. She said the political group wanted to get a large sum of money which had been left to her by Eastman, Morgan and Miss Wendell. She felt that her very thoughts were being heard, and feared to "move or even read a paper." She described the "seat of consciousness" in her dia-

phragm, where prominent spirits moved and talked to her. Sensorium and memory were intact. School and general knowledge were excellent, and in intelligence rating she obtained adult level with facility. Grudgingly, she admitted her ideas might be imaginary, but vehemently insisted that they "were so very real to her." Tearfully, she begged for assistance to get well, and showed a willingness to cooperate in all that was asked of her. She was neat and tidy, helped with the ward work and assisted helpless patients.

Within a few days after her admission, the idea of autocatharsis was suggested to her, and she eagerly seized upon the notion of "writing her troubles," with the hope of ridding herself of her "persecutors, fears and enemies." The plan of procedure was followed as outlined early in this paper, and below follows a resumé of her writing, with some verbatim excerpts transcribed just as she penned them, without any corrections or alterations.

THE HISTOIRE OF MARIA S—

"*Aimer et penceer, c'est la veritable vie des esprits.*" (Voltaire)

In the Spring of 1927, I went over to Europe to visit my Mother in Berlin, Germany. When I came back in the early autumn of the same year and my eyes overlooked the skyline of New York, my heart was filled with joy for I loved this great city, I felt it had become my second home.

I mention this fact, because in the interview with my physician when I came here, he asked me if I felt somewhat sorry when I had to leave my home country, and if I continuously had a longing for Germany. Although I have a deep understanding for German culture and love for Germany's natural beauties—I am not a nationalist and therefore could live happily in almost any country in the world. Longing for the old home country was not the cause of my mental sickness. I try to write down the story from the very beginning, how it developed and how it actually drove me to temporary insanity.

* * *

The very beginning goes as far back as February 1929. It was then when I bought for the first time the German language newspaper "*Staatszeitung*." In its pages I found a surprisingly large space in which the opinions of the readers were being printed . . . Obviously the majority of these amateur-writers disliked the new social order in Germany . . . I have

never been a professional writer, yet during the war and after the war I occasionally had contributed articles to Berlin Newspapers. So I considered myself as just the person fited to tell these Germans the truth about their homecountry and the great progress being made in many fields—as a result of the liberal-socialistic ruling.

Vigorously I placed my typewriter on the writingtable and—wrote.

In german I write rapidly, making short sentences and using plain words. I am not at all original but my style is impressiv.

When I had finished this 500 words article, I knew the essay will fall into the editor's office like a lightning out of the blue sky.

Proudly I signed my name and gave my full address.

This letter of mine, which I mailed on one fine day in February 1929—was the very cause of the mental misery these pages shall deal with.

The following days I waited that my article would appear in the "Reader's forum." I waited in vain. The article was never printed. Instead of letters were printed which apparently were written by employees of the newspaper or their acquaintances, for only people who had read my letter could possibly write in the way these short but numerous contributions were written. The writers performed actual answers to the essay of mine in spite of the fact that it never appears in the paper. One or two of these writings even showed to be a parody of my style. There was no doubt these people made openly fun of me.

With this perception the seed of distrust and suspiciousness had fallen into my conscience; it was determinated to grow with every day, with every year to come and finally to develope to such an enormous weed that it overshadowed reality and the bright light of my five senses.

In the first few weeks I swallowed silently the attacks of these german commonplace-fellows and their females. But the fact that I had given them my full address made me feel very unhappy. It came to my attention that so many beggars knocked at my apartment-door and also pedlars. Observing them I found out, that most of them came only to my apartment, and after having had a more or less short discourse with me, were leaving the house without trying my neighbors sympathies. This observation led to the conclusion that these beggars and pedlars were in reality my opponents, whom inquisitiveness had brought to my door. Knowing my address it was easy for them.

Her alarm mounted, and she stopped reading the newspaper for a while, but within six months she again yielded to the temptation and once more took up the reader's forum, where the discussion had shifted to the eighteenth amendment.

I wanted to show them that I could write better than any correspondent of this paper. Yes—I wanted to prove that! So I wrote and mailed my second article the german paper “Staatszeitung.” Two weeks later it was printed and for a time I was the centre of interest in this column. It gave me some satisfaction, but on the other hand the aggressive articles of some bone-dry prohibitionists against my viewpoints and even my person filled me with fear. Again I thought people came to my door to find out who I am—or just to make fun of me.

The anxiety grew with every week.

I started to fear any German-American, anyone who spoke german to me.

Around New Year 1930 I had my first nervous collapse.—In the following summer the idea came to me that in the apartment upstairs a Dictaphone was installed and connected with our telephon. Probably everything I spoke, the Dictaphone wrote down. That’s what I thought . . .

The apartment upstairs was owned by German-Americans. I distrusted them and suffered under this distrust.

Sometimes on the street or in the subway I felt persecuted.

Again I decided to break every connection with the “deutsche zeitung”—and with the Germans in this country.

In October 1930 we moved out of this apartment, and I insisted that nobody in the house should know where we had moved to.

Fear—unexplainable and powerful—drove me from one place to another.

One night she and her husband returned from a café rather late and found their daughter weeping because she awakened and found herself alone.

And then it was there again!

Somebody must have been in the apartment! Yes! “They” have been in! “They” found out that I left my daughter allone and go out to “Speakeasies!” “They” will make gossip about me, that I go out during the nights drinking and dancing, while the little child is alone in the house, crying all night.

Gossip, imaginary or not, but about me and my husband, filled my mind. I knew exactly what the readers of the german newspaper were talking about us, although I did not know anyone of them personally. I accused my husband that he takes me to places forbidden by law and that he exposes me. Mr. S— did not see that psychological cause of my excitement, he did not know that I was developing slowly but surly a mental sickness—and replied in terms that any average person would! Our place became a place like hell for both of us.

Finally I told him he should live his own life and I shall do so also.

I started to live "my own life" in buying the german paper again!

There was the "Reader's forum"—and the readers were at war! Fashist's and antifashist's threw stones at each other. Without hesitation I judged the anti-fashist's were my friends and the fashist's were my enemies. The fire of enthusiasm flared in me. Ignoring the fact, that articles in this newspaper never would stop a movement which was growing in Europe, I typed during the night a long and splendid essay against Hitler. The following morning, I mailed it, and ten days later it was printed.

I got some printed answers, which expressed satisfaction that after all somebody dared to say what should be said to the blind adorers of a future tyrant.

The one who wrote this sentence, I considered as my special friend; I believed he was one of the editors, who against a majority, was defending me.

Believing I had a friend in this newspaper office I thought I should continue to write—and did so anonymously.

In March 1932 I received by mail a letter which was signed "Heil Hitler."

Apparently a Nazi had written it. In this letter I was asked to stop writing for the "Reader's forum" of the german paper. I was threatened to be denounced to the police. "We know enough about you"—was the strange reveal.

I do not believe that the anonymous writer did know anything about my mental condition, but unconsciously he struck my weakest spot. I was convinced now that German-Americans were making gossip about me.

For a week or so I was like paralyzed. For the first time I neglected my household-duties and also my duties as a mother.

The patient felt something "had to be done." She placed her child in a summer school and then found herself a position as a nurse at a girls' camp on Cape Cod. Here she was happy, feeling that she had "left her troubles in New York." In the camp library she read Bertrand Russell, Heywood Broun, Freud, Adler and Milton. She read no newspapers, felt light-hearted and enjoyed her husband's letters, telling of his eagerness to see her again. At the end of the summer she felt "new energie" to start again family life and brought forward the resolution "never to give my address to a 'bunch of morons'."

In the middle of September I arrived in New York. It was still unusual warm. The pure air of Cape Cod and this late summer air of the city were

two different things—and the sudden change affected me badly. On the day we moved into the new apartment on the Westside 67th Street—I became ill with bilious fever. The pains I had between my shoulders were sometimes intolerable.

Although I did recover in general from this attack, these characteristic pains between my shoulders I kept back and periodically I suffered from it. Sometimes only for a day—sometimes it affected me continuously for weeks. After Christmas, in January 1922 I was sick with these pains. Of course I did do my housework—yet the fact remained, I was in poor health.

Again she read the German newspaper, avidly devouring the news of the street fights in Germany. Knowing her interest in homeland politics, her husband read these news articles aloud, taunting the patient about her sympathies, and emphasizing an item about the beating of some social democrats until they lost consciousness.

“Stop reading!” I cried. “I can’t hear it any more!”

* * *

Finally, one night I cried aloud. On that evening my mind lost its balance.

The following afternoon in the paper she read a statement of the German Minister for Propaganda, and one of his sentences contained the words “a hysterical city woman.”

A hysterical city woman——?

“Why—— he (the minister) refers to *me* by this!”

Of course he means *me* and no one else! The Nazis in New York are in constant connection with the Nazis in Germany.

No——not a Dictaphone.

Perhaps—perhaps it is a wire! A wire secretly connected with the short wave radios! And the minister did hear our conversation—and he did hear my crying!

But why should they connect our apartment with the radio—? Why am I so important to them—?

The patient felt that the answer to this was the money and that her wealth gave her such power her enemies feared she might return to Germany and organize a counter-revolution.

Are they really afraid about my writings, do they think I might be a danger for them? No! . . .

It must have some other reason!

There must be *money* in back of me! Only a rich person is important. Only *money* gives power! . . .

It must be the Wendel money! My father's grandmother was borne Wendel. She was borne in Stralan near Berlin. The Wendel's came from Stralan . . .

When my husband came home I asked him if he knew, to how many millions the Wendel-inheritance amounted for.

"Oh—about 70 or 80 millions. Why—?"

"Because these millions are mine! My fathers grandmothers maiden name is Wendel; she was born in Stralan; the Wendel's came from Stralan!"

"How can you prove it?"

This question, logical as it was, could not be answered impromptu, so my mind refused to deal with—.

Next morning I bought the german paper "Staatszeitung." In the "Readers forum" to my surprise, there was no controversy about fascist's and Anti-fascist's, but a discussion of numberalogie was going on. "There is something in a number" somebody wrote. I read carefully the articles about numbers and their different meanings. One number—among others was 93. I started to figure for my own purpose . . .

Why—these articles were written especially for me! 93—means 93 millions!! 93 millions are due to me! These editors know about me! Everyone who has a short-wave radio and knows about this secret sender in my apartment can listening in and hear every word that is being said in my rooms. Yesterday they heard me talking to my husband, heard me asking him how many millions the Wendel's had left! Today this friendly editor tells me about it in an article! He is not the only friend I have! No no! I have many friends—but many enemies also! Until now I never spoke to myself. Suddenly I did.

"How did Heine put it?" I looked at the wall—just so if in the middle of the wall was an invisible microphone. "Heinrich Heine said, mankind will allways be devided into two parties—Barbarians and Hellenas!" And then I held a long speech as to the meaning of this quotation.—The next morning at breakfast when I read the Reader's forum I found among other articles a composition about Heinrich Heine.

Was it accidently—? Or was it some kind of a thought-transmission which made it possible that an article on the same subject had been printed so soon after I had talked about it to an imaginary audience—? Did a mystical power work against me to bring me to mental ruin?—

• • •

"My thoughts! Exactly the same words I have used—are printed here in this article!" I shouted—addressing my husband, who was sitting with me at the breakfast table. "They are listening in here all day, steal my thoughts and print it!"

Mr. S—— looked up from *his* paper. "What are you talking about? Who is listening in—?"

"The people! We are on the radio, connected by a secret wire! They are listening in from morning to evening!" . . .

"Because of the money! Of the Wendel-money, which I must get, because I am the heiress—and the fascist's wont give it to me!"

"If you feel so sure of your relationship to the Wendel's you must get an attorney" Mr. S—— replied laughing. ". . . About the wire, I advise you, go to the police station and tell them about it. Perhaps they do something to find out about it. As far as I am concerned—I don't care if the whole city is listening in! I rather feel flattered; we must be quit interesting people!" . . .

He is too naïve—I thought and decided never to mention the matter to him any more.

After he left I was not able to start my housework. I imagined that people were sitting near their short-wave radio-sets and turned the buttons to find my secret station.

"Who is listening in here?" I cried in excitement. "Who dares to—? Who has done this to us to expose me—? Who made this invention? Where is this damn wire? If I only could find it!"

Then I searched for the wire and also for the invisible microphone. In vain! I could not find any special wire what so ever! Desperately I set down and wept.

Then a sudden and deceitful voice in my consciousness told me again that people were listening in, hear me weep and laugh at me, while they were sitting in comfortable chairs by their radiosets, "Scoundrels!" I cried. I walked over to the china closet, took out a pile of dishes and threw it vehemently against the wall . . .

During 1933 she remained at home, seldom venturing out with either her husband or daughter. She felt Hitler was financed by millionaires, and therefore the latter were her enemies who had learned of her articles on fascism. From this point on, she called "fashists" by the term "sadists." The "sadists" were keeping her from the Eastman and Morgan fortunes which had been promised to her as a little girl when she encountered an elderly man in

a forest outside Berlin. The patient then writes in detail of her "distrust, suspicion, melancholy and disappointment" which she attributes to the failure of securing her heritages, to the secret shortwave radios, to the secret wires exposing her to the police, and the thought transmission which revealed to her enemies her husband's complaints of poor food, unwashed linen, etc., so that all the world knew she was a careless housekeeper and a negligent mother. Finally she could bear it no longer.

In the morning when I opened my eyes my first thought was: if there would be already some people sitting by their radios and listen, to come to know how I prepare breakfast and if I bring Evelyn to school in the proper way—? Yes—they wanted to blame me that I am not a good mother nor a good wife!

Sometimes the child would say: Mama! I have this underwear for a whole week—don't you think its time for clean one? Such a remark made (me) feel terrible. The people were listening—the people hear this, they will tell I am dirty!

Because of the fear of being constantly observed through radio-connection—I managed that everything in the house run smoothly. I did not care how high the laundry bill was—if my husband and daughter only had sufficient clean things, that there could be no gossip about this matter.

I observed every word I did say in my house. I managed that our conversation allways was sound and effectiv. If my husband accidentally used a strong word I became nerveous and told him he must not do so in the present of the child. Furthermore I became a fanatic of truth! I never dared to say a simple lie, because the people, who were listening in, would know I lie and would call me a liar. I behaved as a perfect lady, so that the listeners could not say "she is common and impossible to become a heiress."

* * *

This life lasted until late in August. Then I suddenly decided I couldn't bear it any more! I told my imaginary listeners that I don't care what they think about me, and that I don't want the damn money! "I shall move out of this apartment! This is a hell of a place!"

* * *

When I walked through the streets I had the feeling someone followed me, watching every step I made. Sometimes a taxi driver asked me if I wished to have a ride. I judged he was a spy—who was ordered to kidnap me. Once the idea of kidnap entered my mind, it did not leave me any more. I believed, that my husband was in constant danger to be kidnapped by the "Sadists."

One Saturday night he did not come home. At two o'clock at night my fear for his life reached its climax. I dressed, walked out and waited for him near the subway station—all night. Around 8 o'clock in the morning I went home and in desperation I went on my knees and prayed for his life. That I kneeled down to pray is now to me a sure sign how much my mind lost its balance. For I am not a churchgoer and in normal condition I do not pray, because I do not believe in prayers.

By Labor Day the patient had not yet found a new apartment, but "I made the discovery that I was pregnant." She describes in detail her search for an abortionist and, following the operation, her nervous condition, which she attributed to the "wire." At this time she blamed her husband for not "forcing her to consult a psychologist." Soon after this:

One evening in January 1934 I was allone. My husband as usual had left after dinner and Evelyn attended a birthday party of a girl-friend.

About 8 o'clock—somebody knocked at my door. Silence was around me—not a sound to hear, only this sudden knocking.

"Who is it?" I asked.

"I am a poor old man" a voice answered.

"I can't open the door" I replied and felt how the blood went out of my face.

"Don't you like old men—?" the voice outside required.

I extended my arms toward the door, so as to defend myself against something terrible. Fear drove me backwards to the other part of the room, away from the door; but reaching the window—broke down. When Evelyn came home, she had to ask the janitor to open the door for her—she came in, she found me laying on the floor—unconscious.

The next day was Sunday. When I was busy in the bathroom I heard a knocking on the apartment door. I walked over and opened.

There was an old man standing, a beggar, having his hat in both of his hands—and asking me for a coup of hot coffee. My first emotion was to ask him by whom he was sent to my door, or who is paying him for this job. But then I changed my attitude, gave him 10 cents and closed the door . . . Before lunch I was too busy with my housework to think intensively about this new "offense of the enemy."

The patient then tells of a cousin, Anna, now dead, who had been the black sheep of the family because of immoral conduct. The patient began to feel that her enemies thought she was Anna, and this

idea was substantiated one morning when an article appeared in the forum dealing with women who did not take care of their homes adequately. The article was signed "Anna S."

But the thing which caused the worst effect on my soul, was the secret about Anna. Anna was a cousin of mine and ten years older than myself, was the black sheep of the family. Every time when her name was mentioned—mother, uncle, aunt and cousins started to whisper, and whispered endlessly. When I questioned about these secrets, I was told, I must not know about it; but Anna is terrible. First I thought she is perhaps the devil in person—but certainly something horrible.

One day, when I was about twelve years old, I played with my girlfriends in a park near to my home. Suddenly a beautiful young lady in a velvet dress stood before me.

"Is your name Maria S——" she asked me with a lovely smile. I said "Yes" and then she talked to me and told me that she is my cousin. Finally she gave me a nickel and told me I shall buy myself some candies. I ran home and told my mother about the meeting. The colour of my mother's face changed. She became red all over.

"You took money from *this* woman?—" The nickel was in my open hand. My mother took a stick and beat me terribly—

Anna died as a prostitute around 1910—not quite thirty years old. Her mere existence in this world had done me great harm. She was something I must never talk about. She was a secret my family and I had to be ashamed of; to be connected with her by family ties meant disgrace.

Although I know that the injustice done to this unhappy girl, was much greater than her guilt—she remained unpleasant like a dead dog on the bottom of my unconsciousness. Almost every time when I heard the name Anna, I got a little shock and I remembered I must not talk about her . . .

So—on that Sunday afternoon in January 1934 when I read the german paper in the Readers forum there was an article signed Anna S. This time I had a shock that made me tremble . . .

And now my mind worked: "They" knew about her! The sadists found out about Anna!

This woman, who wrote the article signed Anna S., used this pseudo-name to show me, that they know about my "fine family!"

Yes! "They" tell everybody *I am her!* That my name is Anna—and that I have been a prostitute in Germany. And that as such I met Mr. Eastman. And that's why they send these old men to my door! What did the beggar say last night outside of the door—? He said, "Don't you

like old men—?" Yes, yes! "they" send these old beggars around to sneer at me!

I walked up and down the room. I cried in desperation. I talked to the walls, imagining hundreds of people listening by the secret wire.

"My name is not Anna" I asserted (to) the imaginary audience. But! I did not say aloud she was cousin. Oh no! She must not have any connection with me what so ever! Down with you—dead dog!

* * *

Oh my God! all this gossip! all this gossip!

And why—?

Because somebody left me some millions!

"I do not want the money!" "I don't want it! The only thing I desire is to be allowed to leave this place . . .!"

Finally the patient went to a German physician whom she had known in her native country, who had settled in Newark, New Jersey. She was amazed that he did not know why she visited him, feeling that her persecutors had informed him of her. However, she asked him if "the secret wire were possible." The doctor chided her, scoffed at her thoughts, and then suddenly asked her if she heard voices.

"I am not a psychiatrist" he said "but I suppose that such an imaginary trouble is like a tumour or an abscess! We have to make a hole in it—and let the pus out!"

I had to laugh—but grasped the idea . . .

Suddenly he asked me: "Do you hear voices?"

"Voices—? No! I am not Jean d'Are! She heard voices from the heavens—! But I—! I am on the wire, don't you see?"

When I left him, I felt that he really made a hole into the tumour.

Then the patient stopped reading newspapers, but from the libraries secured books on psychoanalysis and psychology, especially those of Jung and Kempf. She listened to Dr. Payne on the radio until he cited the case of a woman who thought there was a secret wire in her home. Then she was convinced that her enemies were in constant communication with her.

I wondered whether Dr. Payne knew about me and my illness, or if it was accidentally that he spoke about this woman. But how could he know about me and my malady? Through the secret wire? . . .

Next day I went to see the landlady of our house. I asked her to have my apartment painted and newly decorated. Before the painters came in I emptied out the rooms and had the furniture brought into the neighbor-flat, which was empty. I searched in every possible place—but could not find a secret wire or a secretly hidden microphone . . . With all the will-power I possessed, I tried to forget all about the secret wire. I did succeed in this effort until New Year 1935.

* * *

Once in the middle of the night I woke up. I had have a very realistic dream. I dreamt a man slept with me and I had intercourse with him. I got out of bed, turned the electric-lamp on near the writing table and lighted a cigarette.

“How was this dream possible?” True enough my husband and I slept in two separate rooms, but I had no desire for another man, at the present, I believed, I had no sexual desire at all.

Who influenced me in such a way?— I looked at the smoke of the cigarette—and sudden there was an answer! Freud, Dr. Freud from Vienna was sitting by a radio—and had influenced my dream while I was asleep . . . I became all excited over the insult done to me. In the morning when I cleaned up my rooms I talked to the walls. I called Dr. Freud terrible names like “gorilla” and “pig” and told him to go back to Vienna, where he can make his experiments with sweet Viennese girls.

* * *

I had continuously sleepless nights, while during the day I hardly could do my housework. I felt as my brain was paralyzed and told the walls Dr. Freud had paralyzed my brain. Later I accused Dr. Adler also, because I thought Freud could not sit day and night by the radio—that there must be someone else—! The “someone” was easily found—it simply was Dr. Adler. Dr. Adler became my worst enemy. He was hired by the sadists to influence me by means of thoughts and through the wire to send me out in the night on the street, so that I could be arrested on the ground of prostitution . . .

“My mind is stronger than yours,” I told the imaginary Dr. Adler, “you will not be able to hypnotize me!”

Knowing that Dr. Adler and Dr. Freud are Austrians—I spoke German to the walls. The belief that I was being observed constantly by two psychoanalysts irritated me so much, that I started to read aloud. I read or recited by heart the classics. For instance Jean d’Arc by Schiller, Hamlet by Shakespeare and King Lear. Then (then) the doll’s house (Nora) by Hendrik Ibsen.

Sometimes I felt like "Nora" and I had the desire to leave my husband and child to live my own life—because the world was waiting for me and my millions—

A few days later in a Sunday paper there was an article on the Morgan art collection, which was illustrated. The patient said to her husband after reading it, "Nobody can deny that the man has taste." When he asked "Who—?" she replied, "J. P. Morgan." She then heard someone laughing.

It did not take me long to imagin that Mr. Morgan himself was listening in.

"Are you prosecuting me—?" I asked, imagining the great banker was sitting near his shortwave radio-set, having my seeret station tuned in. Where he lived, I didnot know and didn't ask. He had a short wave radio-set and he was listening—This was suffieient for me . . . To my question I heard no answer—because technical this was not possible since I had no receiver . . . But my idea was that I had developed my five senses to such a perfection, that I could receive thoughts without a receiving set.

* * *

Yes! He had prosecuted me—but he felt sorry—indeed very sorry that he did so . . .

That Mr. Morgan felt very sorry for me—touched my heart. I felt confidence—and I told him, that I was hunted for years and years by sadists, because I am the heiress of even more millions than he has in his possession.

The thoughts of Mr. Morgan in regard to this was: what I was going to do with this money.

"If I get the money" I assured him—I change the world!" Mr. Morgan then wanted to know if I am communist.

"No"—I said—"I am not—because I do not understand much about economie. What I would like to do is to search and find a *new* Marx—and inspire him to write out a new economical system for the 20 Century. Mr. Morgan thought I have splendid ideas . . .

* * *

From now on I had great hope. Hope is inspiring. As far as reality is concerned I fullfilled my household duties, cooked good meals and were in a good mood—for a while.

I was wondering wether Dr. Freud and Adler still were listening in—trying to influence me mentaly. How was it, that I could work so fast, that I was singing all day long—?

* * *

Around Eastern I wrote the Eastman story.

The facts around which I wrote my phantastic-claim is some kind of a "strange interlude."

In the summer of 1921 when I was wandering through a german forest I met in the loneliness of this forest an old gentleman. He was dressed like an indian pilgrim and looked exactly as Rabindranat Tagore. Very tall he was, with great blue eyes which looked upon me like two sovereigns—he impressed me so much, that I never could forget him, although our encounter lasted not longer than two hours. During this short time we talked about different subjects, chiefly about the madness of war and what should be done to prevent an other one. He spoke german with a heavy accent. As a reply to my question he explained to me, that his mother tongue is english—When we departed near the entrance of his hotel, he asked me for my name and address. I gave it to him—but never heard from him anymore.

Around these simple facts I wrote my Eastman-story—telling that this gentleman was Mr. Eastman and that he, when he died, left all his money to me.

After I had finished writing I had the desire to read it to Prof. Jung.

One day I placed myself near the bookshelves and tried to call Prof. Jung to the radio; I called him silently, by the power of my thoughts . . .

After I made sure he was listening in—I read my Eastman story to him! Afterwards Prof. Jung told me, that I now have many friends—but still more enemies. The sadists are becoming very powerful—but in the end the victory will be ours— and with the money coming to me, we shall achieve great things . . .

* * *

There must have been a summer in the year of 1935 . . . I however did not experience that summer. I did not see a river or a lake, glittering in sunshine . . . The trees in the Central park, the only I saw, looked to me faded and flabby, for I did not see them in Mai and not in June either.

The situation in the home, she points out as follows:

I left my apartment every morning to go to the delicatessen store to buy milk and rolls, some fruit at the cornershop, and the newspapers.

Except this morning shopping, I hardly ever left my house.

My husband did not come home for dinner anymore, the necessities, my daughter needed for lunch and supper, she had to get herself—I only prepared it for her. I personally practically stopped eating.

* * *

One day he (her husband) told me that I was looking terribly, and that I should see a doctor.

He did not realize that I had become a neurotic—for whom he should call help. Nothing was done for me, until my soul actually went to pieces.

* * *

My severe sufferings lasted about three months. From August until November 7 when my husband called the ambulance for the Bellevue Hospital—On the first day of August my daughter left for a Girls scout-camp in the north part of State New York. My husband also had a vacation. During this time he often did not come home at all, spending the night in a friend's apartment.

I was allone—al allone! Loneliness developed the complex to such a degree, that I no longer lived in a real world—but in one of my own imagination . . .

The son of the german editor was a technician. He with the money of Mr. Morgan manufactured a *new* wire . . .

I had to call the spirits for help—because the sadists were after me to kill me. Every night sadistic policemen came into my apartment, while I was asleep—but could not kill me because the spirits protected me. I had ten spirits for my protection, and in the new laboratory in the castle of Mr. Morgan—the spirits talked.

The patient then records numerous conversations with the "spirits" of Russell, Jung, Romain, Freud, Courbiere, Schiller, Bruno, Lincoln and others. She uses the customary devices for producing dramatic script, including directions for what is termed in theatrical parlance "business," that is, the movements and actions of her "spirits" throughout these "conversations." The last of these is presented inasmuch as it carries the patient's own productions up to her admission to Bellevue Hospital, at which point her manuscript ends.

SPIRIT OF DR COURBIERE: Pardon, Madame, but I came to help you. Monsieur Milton is like a mole. He digs and digs—and throws everything upside down.

MARIA: I will ask you something especially important, Monsieur.

COURBIERE: *Sprechen Sie, Madame.*

MARIA: In which part of our body is the consciousness located—?

COURBIERE: Don't you feel it—?

MARIA: I feel it between the chest and the bilge.

COURBIERE: That's right.

The Next Morning After Breakfast

MR. S—— ENTERS THE ROOM: What are you crying for—? Where is Evelyn?

SILENCE

MR S.: Is there no breakfast!

M.: I was not feeling well.

MR. S.: You mean you were too busy with yourself.

SILENCE

MR S.: Where is Evelyn?

M.: With her girl friend.

MR S.: All right. Today I get a physician . . . I want you to dress. I go with you to a doctor.

M.: The doctor can't help me. (SENDING THOUGHTS OUT THROUGH THE NEW STRONG WIRE): Jules Romain, tell me! Yesterday these conversations were *records*?

ANSWER: Records!

MR S.: Who in the world shall help you, if not the doctor. Look in the mirror. You're a skeleton!

MARIA: May be this is true. But the doctor can't help me just now. I shall not dress.

MR S.: You will not go with me to the doctor—?

M.: No.

MR S.: Very well. I get the doctor right in here (HE LEAVES). (SILENCE AFTER A FEW MINUTES. PROF JUNG (ON THE STRONG WIRE): He telephoned to a physician, hired by the sadists. Refuse the examination!

(ONE HOUR LATER THE DOCTOR CAME WITH BY HUSBAND, AND I REFUSED TO BE EXAMINED, MY HUSBAND AND THE DOCTOR SMOKED CIGARETTES . . . AND TALKED TOGETHER IN A LOW VOICE). I could not understand it; suddenly both left. I got in touch with my friends—Constantly I talked with Prof Jung, Jules Romain, Bertrand Russell—and Prof. Einstein. Prof. Einstein told me, that the discovery and manufacturing of the new wire, on which thoughts were sounding, and spirits could talk—represents the greatest discovery ever made! For we have discovered *die funfte Dimension*!

MARIA: Victory! We have discovered the fifth dimension!

(MR S AND THE POLICEMAN)

MARIA: What do you want—?

(POLICEMAN SMILES)

M.: Do you come about the wire—?

MR S.: The doctor will be here in a minute.

M: I don't want him! No! No!

POLICEMAN: We take you for a little ride!

MARIA: Me . . . ? (THE DOCTOR ENTERS THE ROOM) Sadists!
(THE DOCTOR GRABS MY ARM) Leave me alone, you dirty sadist!

DOCTOR: You think I am dirty, but it dos not look so very clean here either.

M.: I have been sick.

DOCTOR: That's why we shall bring you to the hospital. (HE TAKES A SIT, TAKES OUT PENCIL AND PAPER). What dos she talk about?

MR S: Oh—she says, she gets the money from the Wendels, and from J. P. Morgan—about all the millionaires promised her to give her their money. (DOCTOR LAUGHS)

MARIA: What—? This is not true! Don't write that down. My husband dos not know anything about my troubles.

DOCTOR: Alright! You tell your troubles to the doctor in the Bellevue Hospital.

MARIA: Bellevue Hospital . . . ? No, No! Leave me alone! (I SLAPED THE DOCTOR IN HIS FACE).

After that I felt as I was put into iron chains and was carried out of the apartment.

FINIS

(Please excuse mistakes in english)

Comment: During the portion of the day not spent in writing (and this latter occupation consumed but two hours daily) the patient busied herself with reading, either newspapers or books on psychology and psychoanalysis which her husband brought her from the public library. She helped in ward work, and took a keen interest in occupational therapy classes. On admission she had been emaciated and undernourished, but after three months of supportive medication and a high caloric diet she regained her normal weight and physical status. She had meanwhile been presented in conference soon after admission, at which time she was diagnosed, for nosological purposes, "paranoid condition." When she was finally presented before the entire hospital staff, she demonstrated complete loss of symptoms, answered every question asked of her, discussed her case from all angles with various physicians, but

frankly admitting all of the various ideas, delusions and hallucinations that she had prior to recovery.

Unlike Freud's "Schrieber case," our patient did not substitute her symptoms with any exalted state, religious delusions, or other ideas. During the writing of her "history," we could observe her, from day to day, coming closer to reality and environment and adjusting herself to her surroundings. Briefly, then, from all clinical observations, the patient had recovered. She was paroled March 15, 1936.

The question might well be asked: Did the patient recover because she had been occupied? Had the writing itself been nothing more than an instrument of occupational therapy? Or, did she take back the material she had produced, review it, digest it and analyze it much in the same fashion of an individual who had been subjected to a formal psychoanalysis? We feel the latter was the case. On subsequent visits to parole clinic, the patient talked of her own deductions, demonstrated keen insight as she discussed the causative factors and the resulting mechanisms. Her language avoided Freudian terms despite her knowledge of the subject. Without assistance, she traced the origin of her troubles from a strong father fixation and an accompanying hatred for the mother. She remarked on the disappointment of not being allowed to follow the stage as a career. She recognized her choice of mate as a father surrogate and her disappointment in marriage. Her ideas of grandeur, her desire to "hold the center of the stage"—to command the "spot light"—to be in the public eye, found outlet in her writings. That her hallucinations should include scientists and authors and philosophers she felt was the compensatory mechanism that enabled her mind, which she unconsciously sensed was inferior, to match itself with brilliant intellects. Similarly did she explain the inheritances of wealth, the desire for power, and other ideas she had maintained.

With each subsequent visit the patient is showing more and more insight into each and every phase of her psychosis. In the light of such results, can autocatharsis in this selected case be regarded as a mere implement of occupation? Occupational therapy may suc-

ceed in externalizing interests, but it could not develop such deep insight as has occurred in this patient.

This entire presentation is in response to current statements and questions in the literature concerning methods of therapy in functional psychoses, and the following, by Hinsie, seems to summarize most of them:

The psychoanalytic formulations of Freud have established themselves as indispensable to the psychiatric means of treatment and research that characterize the present status of psychiatric advancement. Refinements of technique, investigation of unclear or incomplete knowledge, application of the therapeutic suggestions to selected clinical groups, are being continually studied. It may be expected that modifications of present-day psychoanalytic conceptions will take place to a greater or lesser extent.

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CEREBRAL TOXIC PERICAPILLARY HEMORRHAGE

(Brain Purpura)

BY MAX HELFAND, M. D., AND I. N. WOLFSON, M. D.,

FROM THE DEPARTMENT OF NEUROPATHOLOGY, NEW YORK STATE PSYCHIATRIC INSTITUTE
AND HOSPITAL, NEW YORK, N. Y., AND HUDSON RIVER STATE
HOSPITAL, POUGHKEEPSIE, N. Y.

Cerebral pericapillary hemorrhage, also described as brain purpura, is not a clinico-pathologic entity as it is found in the course of various diseases such as anemia,^{1a-b} scurvy,² typhus,³ malaria,⁴ and following various exogenous toxic substances such as phosgene, mercury, sulphur, veronal, arsphenamine,⁵ etc., and in the so-called hemorrhagic encephalitis⁶ (Baker).

The following report refers to a case of brain purpura developed in the course of arsphenamine treatment. The occurrence of such a finding is quite rare. Statistical studies reveal its presence once in every 1,500 treated cases and its expectancy is one out of every 36,000 injections.⁷

Case Report:

E. R., male, admitted to the Hudson River State Hospital, December 21, 1932. The father died of "apoplexy" at the age of 35 years. The patient was born in New York City on May 15, 1892. He attended public school up to the sixth grade; was a grocery store clerk, irregularly employed for the last three years. He indulged in alcohol since the age of 17 and frequently drank to excess. Married at the age of 24, he had three children. One girl had "infantile paralysis" at the age of three years.

There is a vague history of impairment of vision associated with diplopia about 15 or 16 years ago. This condition lasted for a period of a few months and was allegedly relieved by glasses. The patient and his family denied a history of any acute illnesses with fever, chills, or headaches. Eight years ago the patient had a urethral discharge for which he received no treatment.

Sometime in 1929 while intoxicated the patient fractured his jaw. For a while he was not able to take anything by mouth but liquids, and, as a result, lost 20 pounds in weight. Since then he began to feel gradually weaker, more so in the left side of his body. A few

months later it was discovered that he had a positive blood Wassermann with negative spinal fluid findings. He received several antiluetic treatments at the board of health clinic. He continued, however, in poor physical health, worried about it; the future seemed hopeless to him. On December 20, 1932, after drinking some liquor, he attempted suicide by gas.

On December 21, 1932, the patient was admitted to the Hudson River State Hospital. At that time he stated that he had no strength, that his left arm and hand, and head shook and the left leg dragged.

The physical examination revealed malnutrition, a systolic murmur in the mitral area and a left inguinal hernia. The patient displayed a shuffling gait suggesting propulsion. His facial expression was rather blank and staring, he held his mouth open; the muscles of his left face were weak. There was some weakness in the left arm and leg; his left shoulder sagged and there was diminished expansion of the left chest with some muscular atrophy in that area. It was also noted that there were twitching of the eyelids and a coarse tremor of the fingers of his left hand. The deep reflexes were normal. The abdominal, cremasteric and plantar reflexes were absent. No sensory disturbance was noted. The speech showed a tendency to slurring. The ophthalmic examination was negative.

Mental examination of the patient showed very little gross abnormality. He related his story in a relevant and coherent manner. He expressed no delusions or hallucinations. His sensorium was well retained and insight and judgment were said to be fairly good.

During his residence in the hospital the patient was put on tincture of stramonium and it was noted that the muscular rigidity became considerably improved. The patient soon expressed a feeling of well-being. On January 29, 1933, (after a little over a month's residence) the patient was paroled. A diagnosis of psychosis with other brain or nervous diseases, encephalitis lethargica, was made. His condition was considered improved.

Since that time, the patient had returned to the hospital on three different occasions, after brief parole periods. Each time his Parkinsonian syndrome was considerably relieved by tincture of stramonium.

The last return to the hospital was on May 24, 1934, following another attempt at suicide. Soon after admission he showed considerable improvement in his mental condition. He continued in a comfortable physical and mental state, with the exception of a mild attack of bronchitis in November, 1934, for which he did not have to go to bed.

The laboratory findings during his several residences in the hospital were as follows:

- 1/ 3/33—Blood Wassermann and Kahn, 4+; spinal fluid, negative, 1 cell; normal globulin.
- 5/22/33—Blood Wassermann and Kahn, 4+; spinal fluid, negative, 2 cells; normal globulin.
- 12/18/33—Blood Wassermann and Kahn, 2+; spinal fluid, negative, 1 cell; normal globulin.
- 3/26/34—Blood Wassermann and Kahn, 4+; spinal fluid, 1+; 7 cells.
- 6/ 4/34—Blood Wassermann, 4+; Kahn 3+.
- 6/18/34—Spinal fluid negative; 3 cells and normal globulin.
- 11/13/34—Blood Wassermann and Kahn, negative.

During his residences in the hospital, the patient received at weekly intervals a total of 50 intravenous injections of sulpharsphenamine, 6 gm. and 21 intramuscular injections of bismuth salicylate in oil—2 grs. The last course of treatment consisted of eight intravenous injections of sulpharsphenamine .6 gm. and the last injection was given on January 29, 1935.

On February 3 the patient complained that he did not feel well. He said that he had a headache and pains and aches all over his body. His temperature was 101.6°, pulse 90 and respiration 22. The patient was put to bed. Neurological examination did not reveal any new finding. A tentative diagnosis of grippe was made. The patient was given salicylates. The same afternoon he said that he felt a little better. He was comfortable the next morning and ate his breakfast. His temperature was 99.4°, pulse 84 and respiration 18. At about 11 a. m., however, when the nurse in charge was going to give the patient his medication, he noticed that the patient's speech was thick and that he had difficulty in swallowing. On examination, the facial expression appeared fixed, the eyes staring but no abnormal pupillary changes nor any evidence of weakness in the eye muscles was noted. Patient had a thick, un-

intelligible speech. He was aware of his difficulty and seemed to be concerned about it. There was no rigidity of the neck, however, there was left facial weakness; the tongue deviated to the right. There was no limitation of movement in the upper or lower extremities but the patient complained of considerable weakness in his legs and the muscles of his back; he had great difficulty in getting up to a sitting position. His deep reflexes were hyperactive. There were no abdominal reflexes. The same afternoon the patient was in a semi-comatose state; he was not able to speak. The breathing was stertorous. He could not be made to execute any commands; however, when spoken to he opened his eyes and stared, suggesting some recognition. The next morning he was in deep coma. His breathing was labored. Both upper and lower extremities showed flaccid paralysis. The deep reflexes were active. There were no abnormal reflexes. The spinal fluid examination on that day showed eight cells per cm. c., largely polynuclears; the globulin was increased. The patient continued in this state, running a progressively high temperature and an increasing pulse rate. The respiratory sounds were suggestive of progressive congestion of both lungs. The temperature on February 8 at 8 p. m. was 108°. The pulse fluctuated between 100 and 168.

The patient died on February 8, 1935, at 9:10 p. m.

Pathologic Findings:

Brain is medium sized, of normal weight and consistency. The convolutions are full, well rounded but there is a slight widening of the sulci in the Sylvian and central regions. The pia is thickened and its vessels show rather intense congestion. There are slight subarachnoid blood-stained areas distributed over the upper convexities.

The cut surface of the cerebrum shows numerous minute hemorrhages distributed throughout the corpus callosum and basal ganglia, mid-brain, internal capsule and gray matter surrounding the fourth ventricle. In places, particularly in the corpus callosum, these hemorrhages are closely packed so as to give the area a dark petechial appearance. Similar petechial hemorrhages are seen involving the walls of both lateral and fourth ventricles (Figure 1) and regions of the dentate nuclei. The periphery of the pes

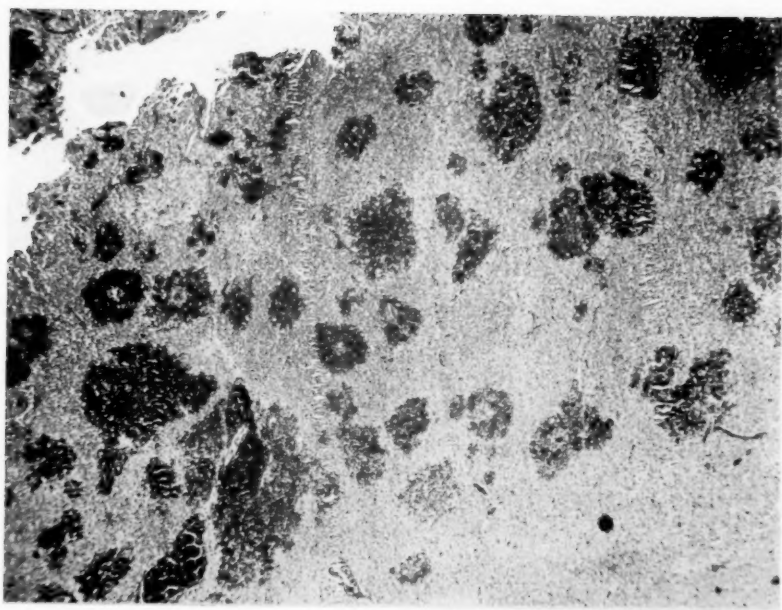


Figure 1. Hematoxylin eosin stain showing many pericapillary hemorrhages.



Figure 2. Hematoxylin eosin stain showing pericapillary hemorrhages along the lateral walls of the 4th ventricle.

pedunculi in the mesencephalon also show a slight degree of the hemorrhage.

Blocks were taken from various areas containing the lesions and some material was submitted for analysis to the department of chemistry, Psychiatric Institute, which reports the presence of arsenic in the following quantities:

	Wet weight	Dry weight	Arsenic, mgs./100 gms., dry weight
Cerebrum	11.86	2.96	0.064
Cerebellum	9.79	1.83	0.220
Mid-brain	10.40	2.93	0.051

Sections were taken from the following areas: frontal, parietal, occipital, Ammon's horn, basal ganglia, midbrain, pons, medulla and cerebellum. These were stained with hematoxylin, eosin, Nissl, Spielmeier, Holzer, Bielschowsky, Cajal and Hortega.

Microscopic Findings:

The hematoxylin eosin stain revealed numerous circumscribed flea-bite like areas of hemorrhagic exudations. (Figure 2) These were found to be discrete or at times would coalesce into a fused wide area. On closer examination they seemed to be made up of pericapillary extravasation with a necrosis of tissue in various stages of intensity. Some of these contained in their centers a deposit of the shadow-like remnant of endothelial cells, evidently of blood vessel wall origin. Others showed a hyalin thrombotic formation or merely a thread-like fibrinous network. Immediately surrounding the central area, an area of necrosis is seen (coagulation necrosis of Spielmeier). This usually appears to be homogenous in structure, though, at times, one may discern a flaked-like remnant of tissue. Said necrotic area is in turn surrounded by a ring of cells whose structures typify all forms of glia. Immediately bordering this ring and somewhat penetrating it is an area of blood cells. This is a typical structure of an annular hemorrhage. The blood cell layer is not, however, an essential finding for in many of the annular lesions the external ring of blood cells is lacking. The hemorrhagic extravasations, the structure of which has just been described, were found in the genu of the corpus callosum in the gray matter surrounding the fourth ventricle, especially in the

dorso-lateral portion of the medulla encroaching on the dentate nucleus, in the posterior limb of the internal capsule and in the pes pedunculi of both sides. In the white matter bordering on the dentate nucleus, necrotic areas we found resembling the so-called grape-like areas of disintegration of Buscaino. No hemorrhages were evidenced in these areas.

The Nissl stain discloses similar findings except that it allows a much clearer detailed study of the nature of the cells constituting the inner ring to the blood cells (Figure 3). Said ring, surrounding the area of coagulation necrosis, is seen to be made up partly of round, dark and pyknotic nuclei belonging to cells which resemble oligodendroglia cells. Other nuclei, however, undoubtedly have the structure of microglia and even that of macroglia nuclei. One may reasonably conclude that all forms of glia partake in the formation of the annular hemorrhage. The Nissl stain discloses in addition an increase of glia cells in the surrounding white substance and to a lesser extent in the gray matter. Hyperplastic glia is also found in areas free from hemorrhage. The Holzer stain does not reveal any abnormal increase in fibroblastic glia elements. No phenomena of repair with glia fibrils could be detected in the hemorrhagic centers.

The study of the ganglion cells in the various layers of the cortex reveals diffuse pathologic changes of numerous elements, some appearing shrunken and darkly stained without any differentiation of internal structure, others, exhibiting chromatolysis and various stages of disintegration.

The blood vessels do not show any appreciable changes in their wall structures, excepting of course, those involved in the areas of hemorrhage. There were some blood vessels which showed very mild lymphocytic infiltration but these vessels were in the immediate vicinity of degenerative areas and thus representing the symptomatic type and not the true type of inflammatory reaction.

The Spielmeyer medullary sheath stain reveals a very interesting finding. In sections through its various areas but more so through the frontal area, one finds that the entire section is permeated with small, well circumscribed areas of demyelination resulting in almost a sieve-like appearance of the tissue. These areas are gen-

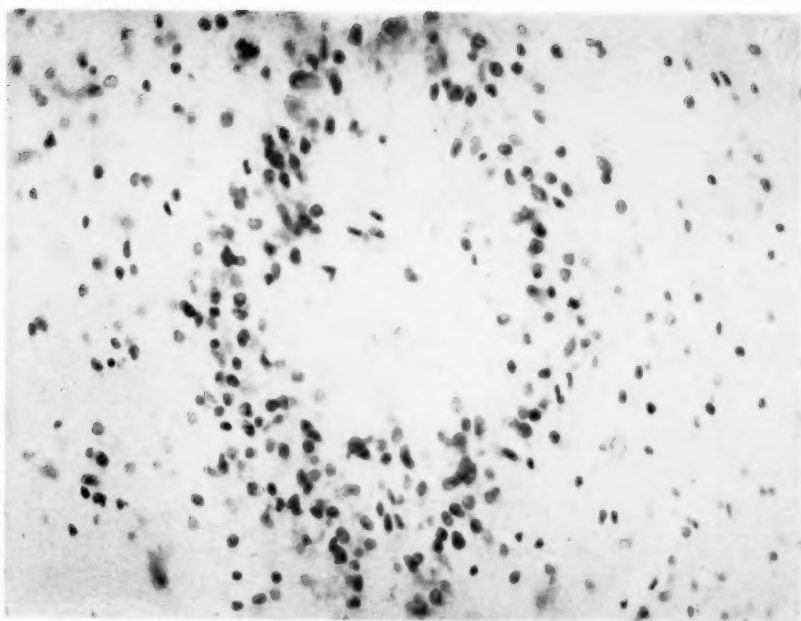


Figure 3. Nissl stain showing structure of annular hemorrhage.

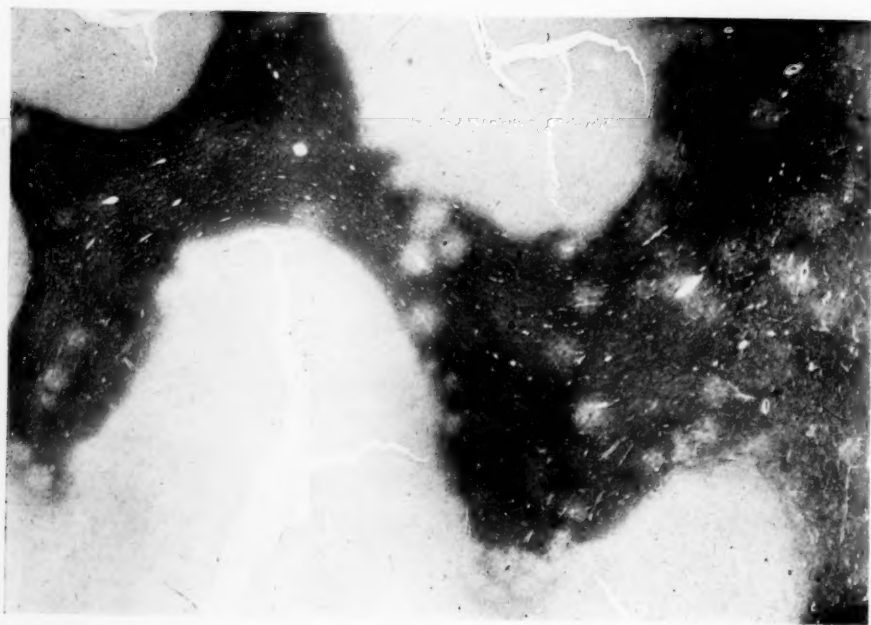


Fig. 4. Spielmeyer stain showing sieve-like demyelination of the white substance.

erally found in the white substance but some are also present in the gray, particularly at the border between gray and white matter. (Figure 4) Under high-power observation, fragmented medullary substance under the form of flakes, shells or balls are detectable, an expression of unquestionable destruction of medullary sheaths. The areas in the gray substance involve occasionally both the tangential and, at others, the radiary medullary fibers of the inner layers. In the areas where the hemorrhages were present and their immediate vicinity show a more diffuse demyelination contrasting with the darkly-stained appearance of the minute hemorrhagic exudate.

The fat stain showed many ganglion cells infiltrated with small discrete fatty granules. These were especially seen in the temporal and parietal lobes. The Purkinje cells seem to be markedly involved. Many vessels contained an increase of fat in their walls, so much so that some endothelial cells were fully saturated with it.

It is noteworthy that no "Abbau" (scavenger) cells are found in any of the degenerative areas even where a great amount of fiber destruction is present. With fat stain (scarlet red) the necrotic debris stained a purplish-red instead of the typical brilliant red color, thus pointing to a possible variation in the nature of the disintegrated tissue or a possible variation in the reaction properties of the cellular elements partaking in the clearing up of the disintegrated material.

The Cajal gold sublimate method for astrocytes confirms the finding described with the Nissi method and discloses in addition degenerative changes of the astrocytes in the immediate vicinity of the blood ring. (The degeneration is represented mainly by fragmentation of the glia processes—clasmotodendrosis).

The silver stain for microglia reveals hypertrophic and hyperplastic changes of said elements. These were especially noticeable in sections through the basal ganglia and cerebellum. The cells were definitely enlarged. The dendrites were thickened and spiculed and some showed fragmentation of the dendritic processes. The silver stain for oligo revealed a great many cells in a state of acute swelling. These cells were diffusely scattered and mostly found in the white substance, especially in the vicinity of hemorrhagic necrosis.

Pathogenesis of the Pericapillary Hemorrhages:

Various theories have been advanced to account for brain purpura.

1. The molecule of arsphenamine or its end product is supposed to act directly on the endothelial lining cells of the blood vessel wall and damage therefore their structure, thus leading to swelling, necrosis and diapedetic hemorrhage.⁸ Globus⁹ advocated that a "direct and selective effect of the arsphenamine or of some of its fractions on the vascular endothelium is responsible for the disruption of the capillaries, resulting in hemorrhages." This explanation is obviously inadequate because hemorrhagic extravasations in this and other cases reported in the literature are found surrounding vessels which show no evident damage of their walls.

2. Thrombosis of blood vessels, especially in the area drained by Galen's^{10a-b} vein has been also considered as a primary determining factor of the hemorrhage. In our case, as well as in other described cases, the distribution of the lesions is diffuse and not located in the area drained by any particular vein.

3. The occurrence of an Herxheimer's reaction¹¹ has been brought forward by some investigators. It is claimed that toxic bodies are liberated from the massive destruction of spirochetes and this produces the pathologic changes. That obviously cannot be maintained because of the fact that brain purpura is not found only in syphilis but also in many other diseases in which syphilis does not play a rôle.

4. Hemorrhages have been considered as an expression of an allergic reaction and other nitroid reactions. Shimenes¹² claims to have established the occurrence of allergic reaction in 18 out of 20 cases. He claims that some impurity in the drug is responsible for the allergic phenomena. The acceptance of this theory is difficult when we bear in mind that brain purpura did not occur as the result of the first injection. The British Medical Research Council did not find any evidence to support such a theory and have rejected the anaphylactic nature of reactions following salvarsan treatment.¹³

5. Asuna and Kuhn¹⁴ pointed out a specific functional but not organic damage to the endothelial cells belonging to the reticulo-

endothelial system, as a result of which coefficient of permeability may be altered thus permitting hemorrhage to develop.

6. Ricker¹⁵ suggested a toxic injury to the vasomotor nerves of the vessel walls leading to vasoconstriction and vasoparalysis, which will actively interfere with the nutrition of the blood vessel walls and of the territory of the blood vessel supply. The resulting necrobiotic changes (angionecrosis) will be followed by hemorrhages. Spielmeyer¹⁶ feels that it is not always essential to find vessels in a state of spasm but that a condition of stasis can also result in similar necrobiotic changes. It is felt that the blood vessel spasm would lead to a relative tissue anoxemia resulting in an accumulation of tissue metabolites such as hydrogen-ion concentration, lactic acid, histamine and acetyl-cholin derivatives. Said products may in turn cause vaso-dilatation and increased endothelial permeability thus leading to diapedetic extravasations. On the other hand, diapedesis may cause an increase of tissue metabolites, so that a vicious circle is established leading to progressive perivascular and vascular necrobiosis.

Spatz¹⁷ and Weinman¹⁸ sum up their opinion when they say that brain purpura may be brought out by both circumscribed injuries to the blood vessel walls due to toxic circulatory agents by vasomotor dysfunctions.

The microscopic findings of our case point to the fact that brain purpura may represent the end result of a series of causes entering more or less simultaneously into action. Some of the causes may be of a predisposing nature and others of a precipitating nature. In our case, for instance, the presence of chronic encephalitis and chronic alcoholism may have played the part of predisposing factors which fact upholds Jakob's contention that in many cases of pericapillary hemorrhage one finds chronic luetic vascular changes or other pre-existing vascular inadequacies. Alcohol and encephalitis may have determined in our case the locus minoris resistentiae.

Arsenic must have played the part of a precipitating agent and may have acted by both damaging the endothelial lining elements of the small blood vessels and by producing through toxic mechanisms a damage of the perivascular tissue thus creating one of the

most essential factors in determining a brain hemorrhage, i. e., the presence of angio- and perivascular necrosis.

We have no direct proof in our case of the occurrence of vasospasm or stasis as advocated by Richter. Although said mechanism may have played at one time or another an important part in determining diapedesis, we feel that the toxic action of the arsenical component of the drug has also played a part in determining the areas of demyelination which are found scattered in the white substance and which do not seem to be related to either occlusion of blood vessels or hemorrhages. To what extent chronic alcoholism is responsible for the said area of demyelination it is difficult to answer because of the fact that both alcoholism and arsenical intoxication may result in the production of similar areas of demyelination.

We feel that the term used by Globus⁹ of "encephalorrhagia" (flow of the brain) is somewhat misleading and we prefer the term of cerebral toxic pericapillary hemorrhages, thus implying in the definition the suspected pathogenic mechanism of a toxic action in contrast with other forms of pericapillary hemorrhages where hypertension and other factors may play an important rôle.

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THE MODIFICATIONS OF BEHAVIOR CONSEQUENT TO CEREBRAL LESIONS*

BY KURT GOLDSTEIN, M. D.,

FROM THE NEW YORK STATE PSYCHIATRIC INSTITUTE AND HOSPITAL, NEW YORK, N. Y.

The characteristic difference between the older and the more recent orientation in psychopathology is, one may say, that the former tended to regard the individual symptoms or the individual syndromes by themselves whereas the more recent point of view regards every single phenomenon as expression of the struggle of the personality changed by the disease, with the task confronting it. Thus, formerly one tended to refer the aphasic symptoms to an impairment of definite discrete linguistic faculties or, anatomically speaking, an impairment of definite cerebral centers. The behavior in general considered under the heads of attention, fatigability, memory and so forth, was drawn into consideration only insofar as any disturbance under these heads was thought to produce a disturbing effect upon the single performances and thus might cover up the true state of facts.

In the new point of view the general behavior passes over, from the very beginning, into the analysis of performance, that is to say, no separation at all is made between it and the single performance. Changes in attention, memory, fatigue and so forth are themselves regarded as single manifestations of the modification affecting the whole organism.

This new point of view is no arbitrarily new theory; on the contrary, it developed of necessity from the analysis of the symptoms themselves. It mediated not only a better understanding, with fewer preconceptions of the known phenomena, but also facilitated the discovery of many new ones which remained hidden to the older standpoint.

From this angle the problem of the total behavior of patients suffering from brain lesions acquires a special significance. Detailed knowledge of the modified state of behavior in general, especially on the doctor's examination—which is habitually the founda-

*This paper comprises the subject matter of lectures delivered by the author in a graduate course in psychiatry. Their substance reappears unchanged and only some bibliographical references have been added.

tion of diagnosis—is therefore required for judging any separate performance.

This paper will deal with such modifications of behavior in general, consequent to cerebral lesions.

* * *

We shall start from observations on cerebral injuries of more or less remote origin which are externally healed but have left behind some irreparable defects. We make use of this material because it exhibits with special clearness the facts with which we are concerned. In the main we shall confine ourselves to concrete observations such as are to be made in the course of clinic observations.

If one observes patients with severe brain affections, without prejudice one will frequently find considerable variation in the performances. Apparently similar tasks will sometimes be properly performed, sometimes not.

The common tendency has been to refer those variations to disturbances of attention, of interest, and to abnormal fatigue or exhaustion, in short to disturbances of what are called “general functions.” This explanation remains hypothetical, because it has never been possible to demonstrate the independent existence of these supposed disturbances. Painstaking observation, as a matter of fact, discloses that attention, interest, memory, fatigue, etc., vary quite as the performances vary. They are sometimes good, sometimes bad. We have here the same problem as before: why is the patient attentive, interested in one situation, and inattentive, uninterested, tired, in another?

The clue can be found through careful observations of the patient's behavior as a whole when faced either with such tasks as he can perform or with those he cannot. We shall then find that his behavior as a whole is fundamentally different in the one group of cases from what it is in the other. Knowledge of these highly characteristic facts of behavior not only is of basic importance for the understanding of organic disorders, but also throws light on the neuroses and psychoses by bringing to the surface a number of factors conditioning many of their symptoms.

Now, let us take a look at our patients. Here is a man with a cerebral lesion. He is given a problem in simple arithmetic. He is

unable to solve it. But simply noticing and recording the fact that he is unable to perform a simple multiplication would be an exceedingly inadequate account of the patient's reaction to what we are after. Just looking at him we can see a great deal more than his arithmetical failure. He looks dazed, changes color, becomes agitated, anxious, starts to fumble, his pulse becomes irregular; a moment before amiable, he is now sullen, evasive or exhibits temper, becomes even aggressive. It takes some time before the patient is restored to a state allowing the examinations to be continued. Because the patient is so disturbed in his whole behavior, we call situations of this kind *catastrophic situations*.

In the presence of a task which he can perform, the same patient behaves in the very opposite manner. He looks animated and pleased, is steady and collected, interested, cooperative; he is "all there." One might infer from this contrast in behavior that the patient's reaction as a whole is simply his reaction to his adequacy or inadequacy in the task. However, the fact that the reaction complex does not follow the performance or non-performance, but occurs simultaneously with them, speaks against such an explanation. A further argument against it is that the patients commonly have no idea why they are agitated, angry, resistant.

As a matter of fact, the contrasting behavior is to be regarded as manifestation of the organism as a whole, according to whether the individual succeeds or fails in solving the problem.

This contrast in behavior is not grounded purely psychically and thus cannot be understood psychologically. It can be grasped only from the biologic point of view, a point of view which I have dealt with at length in another place but can here only allude to.

We are justified in assuming that the organism has a relatively constant structure and relatively constant functions. If this organism is confronted with tasks it can cope with it will not only perform them but show objectively and subjectively the picture of harmonious functioning, the picture of order. The acts performed in such a situation will appear to us as performances of which this organism is normally capable, which suit this organism. Subjectively, they are experienced in a mood of contentment as activity and satisfaction, of order and harmony.

An organism in a normal state presents to us the appearance of good order. It is very important, however, to bear in mind that every new stimulus affects the situation within the organism, thus modifying it, with the consequence that the recurrence of any stimulus striking a changed configuration may elicit a response different from the previous one. This may be expected to lead to disorderly behavior of the organism. Actually this is not so. More often we observe that the processes in the organism have a relative constancy and that the organism remains essentially the same despite its relative change by stimulus. If that were not the case we should be unable to recognize any organism as such because it would be now this and now another.

I have explained in another place that this relative constancy can be maintained only under the condition that each change produced by a stimulus fades within a certain time, so that the organism always comes back again in such a condition as to keep its existence essentially uniform. This rearrangement can be demonstrated by very many facts of physiology and psychology. It guarantees the existence of the organism. Therefore, it deserves the term of basic biological law.

The preservation of such a constancy requires a determinate environment or a certain milieu. Only such events or processes in the external world as make possible such readaptation, fit the milieu of the organism and act as stimuli. All other changes in the environment are ineffective. We know that each organism is non-receptive to certain environmental events. Only if they are very powerful can they enforce entry into the organism. They will then, however, not produce orderly, harmonious responses but cause disorder, disharmony, defective performance and so on up to catastrophic situations with all their concomitants, particularly the appearance of anxiety.

The life of the organism is thus bound up with the possibility of finding an environmental situation which makes minimum demands on it likely to lead to catastrophic reactions. The normal human being is in a situation, his normal milieu enables him despite irritants entering from the environment, to develop his personality in relative order.

Every sort of damage of the brain involves an impairment of structure and thus of performance and concomitantly upsets this readaptation. Both factors cause normal stimuli, that is, the stimuli coming from the familiar environment to induce catastrophic reactions in the patient. Therefore, we observe, especially in acute stages of all sickness, disordered behavior and, subjectively, anxiety as outstanding symptoms of characteristic features of the catastrophic situation. Not only are the performances very poor but attention, memorization and all the so-called general functions which may be all right are in a situation of order.

The sick man, too, even more than the healthy organism, endeavors to meet all demands as well as possible; his existence is linked to such an endeavor in a higher degree than the healthy man's. Therefore, it is still more important for him not to be exposed to catastrophic situations. The after effects of these situations threaten to deprive him, for a more or less long period, even of such power of performance as he would be otherwise capable of. The incapacity belonging to the catastrophic situation is to be observed over a more or less long period of time after failure in one task. The sick man can exist only when he finds a new milieu adequate to his changed structure. The endeavor to find such a milieu in which he can avoid a particularly catastrophic situation, imprints a quite clear-cut physiognomy on his whole behavior. Many of what might appear to us as symptoms of the existing pathology are really only the expressions of the sick man's flight from catastrophic situations. We shall see in the next lecture in what manner the performances are changed and which situations particularly mean catastrophic situations for the patient. Here we have to deal with the different ways in which the patient evades the catastrophic threat. There are a number of typical forms.

One of these is complete self-exclusion from the world. This is resorted to when almost any stimulus is felt as forecasting or pre-luding catastrophe. The only way out then—in the extreme cases—is loss of consciousness. This factor plays an important rôle in the disturbance of consciousness exhibited by epileptics. I should like to mention here the case of a sufferer from a brain injury. This man, usually in an adequate milieu, was in a well-ordered con-

dition. This remained as long as he stood before tasks he could cope with. But, every time he was faced with a task to which he was not equal, he fell into a violent trembling and finally into a brief state of unconsciousness. This happened even when the task demanded of him was an elementary arithmetic problem which he could not solve. In his case a catastrophic reaction of severest type leading to unconsciousness could be experimentally produced. If, after the patient was restored to his normal condition, he was asked what had been the matter with him and what had been demanded of him, he could give no information whatever.

Resorting to unconsciousness is of course hardly a suitable means for avoiding catastrophic situations since it abolishes contact with any situation. The organism will, therefore, usually seek protection in another way, namely, by picking out situations which promise a minimum of irritating stimuli.

The individual seeks tranquility, avoids company, etc. But completely tranquil situations cannot always be found, nor are they ever a complete protection from disturbances. Upsetting stimuli may arise in any situation and, then, coming so to say out of the blue, they fall upon the patient with the redoubled force of the unexpected. He is least of all equal to meeting anything unexpected. It is of the essence of his alteration that every readjustment becomes painfully difficult. We can observe again and again that patients will start violently upon being suddenly addressed. No longer will it be necessary that what is said to them contain anything irritating. What acts upon them as an irritant is the mere fact that the stimulus comes from a situation not belonging to their present milieu. To avoid such sudden irritations the patient seeks to surround himself with a protective fence which will prevent impinging stimuli from entering. He builds such a fence by everlastingly doing something; concentration upon this activity makes him relatively impervious to the undesired and dreaded stimulation from outside.

These activities that engross the patient need not have any great value in themselves, their usefulness to him consisting in their protective character. This behavior manifests the circumstances that the patients are utterly incapable of the contemplative attitude of

the healthy man, they cannot take themselves for granted, play the part of a detached spectator. Furthermore, the patient inclines to wrap himself in a cloak of indifference; he will glide smilingly past questions or situations he does not know what to do with, or retreat behind a vague, "Oh, I don't know," or "I don't like that," etc.

This characteristic mental slant expresses itself in a perfect abhorrence of a vacuum. Let us say that we offer an aphasic a blank sheet of paper and ask him to write something on it. Even when he is specifically instructed to write on the center of the sheet he will start as closely as possible to the margin and squeeze his writing into the narrowest compass, as if too afraid to venture into the open space of the paper. Any attempt to correct this procedure throws him into instant confusion. Another patient is unable to write unless a starting line is ruled on the paper. If it is not done for him he may do it himself. But he does not need the line because he has been accustomed to write on ruled paper; he does not need it for aligning his letter properly. He does need the starting line as something to take hold of to get started. More striking still is another example: a patient could read what was written on a sheet of paper only after the words were underlined. I write a letter on the blackboard; he is unable to read it. Now he takes the chalk and draws a line under it and immediately he says that is an *a*.

These examples are important not only in respect to the specific physiognomy of the patient's pathology but also for a correct recognition of the patient's several performances in different fields. In the case of the person needing a starting line for writing, the true situation might easily be misinterpreted as *agraphia*.

Another refuge for our patients is an excessive orderliness. As director of a large institute for brain injuries, I had the opportunity to keep patients under observation for ten years and more. It had been our aim to place these patients in a setting as nearly normal as was practicable. Among other things each patient was supposed to look after his personal belongings as would a normal man. Nothing was more illuminating to me than the wardrobes of these people and the meticulous way in which the innumerable odds and ends, the accumulation of ten years residence, were always dis-

posed. Everything had its appointed place and, not only that, it had to occupy that place in just such and such a way. Looking more closely one discovered a quite utilitarian motive behind this formal geometry, namely, bringing each article within the patient's reach with a minimum of effort on his part. Seeing it in this light, it was not so surprising to me to find the most rigid orderliness in the severest cases. Let me give you some other examples of this obsession for orderliness.

Suppose you sit together with a patient of this kind and while talking to him you put some objects at random on the table. If he becomes aware of them he will at once proceed to arrange them in some order. Another example: a patient has just written something for me on a sheet of paper. The examination is concluded. "That is all," I say, make a quick note and drop the pencil on the sheet of paper which happens to be lying aslant. The patient takes up the pencil, straightens the paper carefully so as to bring its side parallel with the side of the table, and then as carefully, places the pencil parallel with the margin of the paper. I change the pencil to an oblique position and the patient once more puts it back into the parallel position. This game can be kept up for some time. In fact, if the patient is made to desist, being told that the pencil should be left in the oblique position, he will obey with signs of visible discomfort.

Before we leave the symptoms, let me bring to your attention one other characteristic peculiarity of these patients. They are utterly unconscious of their deviation from the normal, their own state prior to the development of this cerebral injury. This symptom was first described a long time ago by Anton of Halle in connection with visual disturbance. Later the phenomenon was observed in a wide range of brain lesions. The unawareness of the patients is strikingly displayed when they speak to the physician of their troubles; it is astonishing how very small a part in their complaints is often played by the paralysis or the hemianopic defect, by disturbances of speech, of recognition or of acting. This becomes exceedingly impressive when the existing defect tends toward totality, such as complete blindness and complete loss of speech. Now it is important to take notice that what happens here is not

simply that the patient is subjectively unaware of his defect but that objectively he has so compensated his attitude and acting that these defects cause no difficulty of moment. But we must here remember that, as pointed out earlier, such adequate behavior presupposes that the patient's milieu is free from potentially upsetting stimuli. Adequate behavior indicates that the patient has found a milieu suitable to his altered state, one to which he can adjust himself. Closer examination shows that in order to readjust itself to the world, the injured organism has withdrawn from more or less numerous points of contact with it and has thus attained a readaptation to a shrunken environment.

I shall not go into the particulars here of how this adaptation is achieved. But I want to mention two general observational facts of much importance in that process. First, the degree of readjustment is directly proportional to the severity of the defect. When the latter completely blocks any vitally essential activity, the readjustment becomes much better than in cases of lesser disturbance. When, for example, sight is entirely gone, the patient compensates far more thoroughly than in the presence of only impaired vision. In cases of one-sided paralysis the patient will pass over to making the most of his other side the more effectually, the less function he has left in the injured side. This readjustment accomplished, he loses the sense of being paralyzed at all.

Generalizing, we may say that alterations are shut out from the life of the organism, when they would seriously impair any of its essential functions. If total blindness remained permanently present to the patient's consciousness and his situation would thus be the impossible one of his facing visual demands he could never meet, his only possible reaction would be the "catastrophic reaction." The organism so threatened will spontaneously reach a new equilibrium through readjustment to the non-visual world. This involves of course a drastic shrinkage of one's world and thus, at first, a profound disturbance of the organism and restriction of its function, range. It will, therefore, not be resorted to as long as the injured function can be made use of after a fashion. Thus it comes about that we find patients with merely impaired vision using their eyes but realizing that they do not see well. And thus

results the paradox that we may find less disturbance of general behavior and subjective feeling in cases of total loss of some function than in cases in which this function is only partially disturbed.

I once had a patient who had been shot through the chiasma opticum and was at first totally blind. As long as this lasted he was not conscious of being blind. He used to talk of things visual like any seeing person; he was quiet, his behavior was orderly and one could see that he managed to get along without difficulty in the hospital environment. Later his injury improved and he regained sight up to a certain degree. Now the patient became upset: he sought to orient himself by means of sight but owing to its imperfection succeeded poorly. He was thus less well adapted to his world than he had been when blind. Now, for the first time he spoke of something not being right with his vision and this previously, quite reasonably contented man dropped into a state of depression. "What's to become of me if I can't see?" he would cry.

The second general fact I would put before you is that the readaptations in question are effected without entering the patient's consciousness. Thus the patient's will naturally has no part in them. A patient of mine suffering from visual agnosia could not recognize a single letter visually, yet he could make out the significance of words. We ascertained that he accomplished this by way of the kinesthetic experiences, gained through tracing the letters with movements of his eyes. In this connection, we are interested only in the fact that this patient was not at all conscious of any difference between this method of reading and his previous normal way of reading; and further, that his substitute method had evolved quite spontaneously and in a high degree of perfection.

The modification of general behavior which we have been considering finds its most pregnant expression in persons having big defects. But we find an identical structure in the behavior modification of non-organic disorders. Many symptoms occurring in neuroses and psychoses become comprehensible only when they are considered from the viewpoint here developed. In many neuroses anxiety plays a prominent rôle. Here too, its occurrence finds its explanation as the expression of the patient's catastrophic upset through the collision of the impaired organism with the environ-

ment. We then find the same modes of behavior which we have become acquainted with as characteristic means of escape from anxiety, namely, withdrawal from the world, the doing something urge, substitute performances, compulsive movements and thinking, etc. Our way of looking at these things is not only of theoretical but also of practical importance, since it must induce a quite definite attitude of the physician toward the patient and his several symptoms.

We have seen that the patient's capacity is conditioned by his milieu, and that the suitability of the latter depends on the exclusion of catastrophic stimulations. We have found further that a patient will sometimes shoulder a defect in such a way as to reach better performance in another direction and thus improve his chance of readjustment. In cases where the morbid modification cannot be removed, the task of the physician will therefore be to secure the best possible milieu for the patient. And with respect to this, the physician will have to decide on which of his patient's symptoms are to be eliminated and which to be retained.

We have up to now surveyed the most general reactions of the organism to damage. We found that they issued, above all, in the endeavor to avoid catastrophic situations, the damage of which is multiplied by the defect sustained, and to find a new balance which should make orderly existence possible despite the defect. We saw that this involved a characteristic modification of behavior as a whole, which indeed means more or less extensive restriction of the organism's points of contact with the world, but on the other hand, is the sole means of making the remaining performances possible at all. We shall now consider the specific modification of the performances themselves of the damaged organism.

It was long believed that any performance might be lost or impaired and that this depended simply on which place in the cortex a lesion was situated. To a certain extent this is true. Thus, lesion of the sensory areas of the brain produce sensory loss, lesion of the motor area, disturbance of movements, lesion of the speech area, language difficulties, etc. But this interconnection falls short of accounting for the disturbances, especially in their relation to the patient's total behavior. In cases of lesion of a sensory or motor area

the relevant performances do not drop out uniformly. The lesion takes effect according to a characteristic selective process, to which we shall come back later. There are some cerebral areas, the lesion of which affects all dependent performances, more or less seriously, notably so the frontal lobe. The consequences of a cerebral lesion rarely take the form of a complete loss of performance; usually the performance affected undergoes modification. If the results are viewed, in the customary way, as so many plus or minus, no real insight is gained into what the patient still can do and what he can do no longer. A plus, that is a performance perfectly correct *de facto*, may be attained in a quite incorrect, i. e., abnormal way, without our being able to see this in the result. The patient's pathology consists in this abnormal procedure. In such cases the disturbance may be perfectly camouflaged. One will then have the surprise of finding on a subsequent occasion complete failure in the same or closely similar performance, namely, when the situation does not permit the patient to take his roundabout way, for example, a patient has lost the concept of number; he cannot even tell whether 7 is greater than 4. One would take it for granted that he could not possibly calculate. Nevertheless, he performs calculations quite correctly. That is, he gets correct sums, products, etc. And this is due to the fact that he knows these by heart from before his disability or has memorized them since. Now these correct solutions give no unequivocal information about whether or not numbers are really understood. Just like the plus, the negative result, the minus, is also ambiguous. Factual failure before a task need not mean that the ability to perform it is completely lost. The patient's failure to act, to do anything at all, springs from his feeling of apprehension, of uneasiness about the result he might reach: he is afraid that a wrong result will get him into a catastrophic situation. Only very searching observation of everything in connection with the total situation in which the patient's reactions occur, can give us information about the patient's real performance status. To this situation belongs also the patient's attitude to the physician. If this is one of confidence, the patient, reassured in a measure against the dreaded catastrophic situation, will be much readier to risk also wrong answers. Hence the fact that different

records may be obtained by different physicians from the same patient. On no account must one content himself with merely recording pluses and minuses. This applies of course to all tests, inasmuch as the results can be quantitatively evaluated only if the intermediate steps have been those demanded by the test; and this can be judged only through a close analysis of how the test is performed. Focussing on the "how" is preconditional for employing the test at all.

Guided accordingly, we discern that every affection of a substrate is followed by symptoms of two sorts: first, complete loss of performances due to destruction of structure—these may be termed the negative symptoms; second, modifications of retained performances due to the functional modification undergone by the undamaged substrate as indirect result of the destruction of other substrates. We have every reason to assume that in the normal nervous system no part functions in isolation but in interdependence on the whole or at least more extensive fields of it. Performances in a given field are, therefore, also conditioned by the functioning of other fields. Loss of certain performances, through loss of substrate, brings about modification of the other performances, the substrate of which is not damaged. The symptoms so conditioned we call positive symptoms. Innumerable examples could be adduced from pathology. Let me mention the classical example of the appearance of exaggerated or abnormal reflexes, as of the sign of Babinski, in lesions of the pyramidal tract as expression of the modified function of the spinal cord.

The behavioral changes so arising have received all too little attention. They are not only of great theoretical interest but have the greatest practical importance. For the so-changed performances represent the patient's new equipment for coming to terms with the world and only when we know this equipment thoroughly can we judge the existing disturbance correctly and find the right start for our therapeutic procedure.

This segregation into negative and positive symptoms was made more than a half century ago by the great English neurologist, Hughlings Jackson. For a long time his views were ignored. More recent experiences, especially in connection with brain injuries,

have shown how sound Jackson's views were and have gained them wider recognition. Hughlings Jackson already demonstrated that lesion of a substrate does not lead to an arbitrary loss of performance but to a systematic disintegration. In point of form this disintegration invariably exhibits the same features, whatever region is involved, be it spinal cord, the sub-cortical apparatus or the cortex, or whether reflexes, or motility, speech, thinking or feeling be in issue. The typical form of this disintegration has been traced in a mass of diverse symptoms. It is only knowledge of this form that mediates understanding of the symptoms. We shall, therefore, have to discuss it here, but must confine ourselves to the broader outlines and with particular reference to what seems important in regard to psychopathology.⁴

Let us formulate the principal forms of disintegration in lesions of the nervous system in some theses:

1. Every direct damage causes a rise of the threshold and retardation of the excitation. The receptivity of the patient is reduced. It takes much more time to get him to react. In circumscribed lesions we observe this reduction only in performances of the relevant field, for instance, in the case of lesions of the occipital lobe in visual performances. This change manifests itself in the fact that patients may succeed perfectly in long enough exposures and fail completely in brief exposures of the task. The best way to make these observations is by means of what is called a tachistoscope, an apparatus which permits exposure of figures for very short times in a very easy manner. Some of you will have seen this apparatus in psychological laboratories. This apparatus can be very conveniently used in clinic work, too.

2. If excitation has occurred despite the obstacles, it expands normally and lasts an abnormally long period of time. This abnormal duration is due to the disturbance of the process of readaptation, which we spoke of in the last lecture. In place of a circumscribed response—corresponding to the circumscribed stimulus—we note a more extensive and diffused response. For example, the patient is unable to locate the precise stimulated point on his skin. On the other hand, there is a long after-sensation. Such after-sensation typically occurs in tabes and also in lesion of the central

sensory areas. We find the corresponding phenomenon in the motor field, in tonic innervations, in repetition of the same movements, iteration, in reflexes (clonus) as well as in willed movements, for example, in patients with encephalitis or in catatonies. A word grasped by an aphasic with great difficulty sticks and influences subsequent performances. In this way arises perseveration. It is characteristic that perseveration does not appear under all circumstances; it occurs pre-eminently when the performance has been difficult for the patient and the succeeding performances are also difficult for him. Under such circumstances perseveration can reach such a degree as to make all further examination impossible. Continued perseveration can be avoided to a certain extent by placing the perseverating patient before a task of quite a different character and one he can cope with. This state of thing is methodically of great importance. If in examination, the patient's proclivity to perseveration is not guarded against in the manner indicated, it may frustrate all attempts to do anything with that patient.

3. A third characteristic effect of the damage is that performances of the organism are influenced in a much higher degree by external factors. Since (result of the loss of structure) patients are deprived of more or less of their experiences, external stimuli obtain an abnormal preponderance. This is the clinically well-known distractibility and abnormal subjection to the stimuli. Let me mention the distractibility of the maniac or of postencephalitic children. The abnormal way of "being forced by the stimulus"—I understand by this the condition of being tied to the stimulus, wholly dependent upon it—this "being forced by the stimulus," we encounter for example in persons with extensive cerebral defects. With them it will often happen that when you hold a flashlight to the eyes, the eyes will hook on to the light in such a manner that by movement of the light you can guide the eyes and head through any movements you want. The same "being forced by the stimulus" plays a great rôle in the phenomenon of suggestion.

The distractibility will strike the unexpected observer as inattentiveness, as inability to concentrate. It would, however, be quite unpermissible to dispose of the patient's condition under the gen-

eral caption of "inattention;" indeed, we shall observe in these unseemingly inattentive patients also the very opposite, namely, a morbidly exaggerated attentiveness. It works like this: the patient is attracted by anything that may appear in his environment. He flits from one to the other. When suddenly he is fixated on one thing he can be gotten away from it only with difficulty.

Shifting attention or fixation do not appear at random. Generally speaking, the attention will wander when the matters of presentation make no appeal to the patient. Something that has significance for his particular situation, however, will promptly cause concentration of attention on it. Most things, meaningful to normal persons, make no appeal to the patient; the reason is that our patients have a greatly restricted field of performance and therefore there are a great many things which they do not know how to do. Consequently, they will inertly glide from one thing to another until the thing presents itself which they feel they can do something with; things like this elicit fixation. This fixation is motivated by the fact that the patient, having found something within his capacity, clings to it intensively, as the precious means of protection against the catastrophic situation. You will remember that I have pointed out that these patients show a strong urge to activity within their capacities—keeping busy means a protection from the danger of the catastrophic disturbance.

It will thus become clear that it is not even pertinent to speak of disturbances of attention in these patients; for that would be missing the point completely.

4. The modification of the patient's performances results predominantly from a blurring of the sharp boundaries between figure and ground. I shall explain this very important point in a minute. First a few preliminaries.

As I have pointed out in another place, every process in the nervous system has the character of a figure-ground process. This means every such process presents a circumscribed area differing in form and intensity from the state of the rest of the nervous system. To the circumscribed area, to the figure-ground process in it corresponds a given performance which is what we designate by the term figure—the state and processes in the rest of the nervous

system, the ground process, is the background of this performance of the figure or as we call it for short, the ground. Any process in the nervous system has the character of figure-ground process, any performance one may examine invariably shows this character of figure and ground.

This is anything but an abstraction. This actually can be shown by innumerable concrete examples. Just a few at random.

Raise your arm vertically; the execution of this movement requires, as you can feel yourself and observe in others, a quite definite position for the rest of the body. The raised arm is the figure, the rest of the body is the background. When you look at any picture, you will at once see and understand what is figure and what is background. The terms figure and ground have indeed been brought from our visual experiences; however, they fit not only visual configurations but all configurations. Figure and background can be discriminated as readily in speaking, thinking, feeling, etc. A word becomes meaningful from the context, the meaning of every thought is conditioned by a vast contextual background: the individual educational experience, social status and so on.

Habitually we ignore the background of a performance and pay attention only to the figure. This is observationally bad, for figure and background are intimately interconnected. Neither can be properly evaluated without the other. Correspondingly every change of background will produce a change in figure. Modern museums observe the principle that the values of a painting are conditioned by the background, and to bring out the full values of a given painting, one quite definite background is required. The execution of any precise movement of a limb demands the definite attitude of the rest of the body. The most superficial glance at the way we walk will show that the movements of our legs depend on synchronized movements of our arms and head. When, from any cause, freedom of arms and head is impeded, the gait will change immediately, that is, when the background changes the figure changes also.

Let me repeat that figure and ground performances have their correspondence in the processes of the nervous system. Everything

that happens in it then always follows the pattern of figure and ground. To every performance there corresponds a certain relation of figure and ground process in the nervous system. Now, every damage in the nervous system disturbs this relation. Thereby the clear relief of figure from background suffers. Figure and background intermingle, inducing a general leveling. This is sometimes carried to the point of inversion where the figure becomes background and the background figure.

To demonstrate to you the fundamental importance of the figure-ground relation⁵ and of the necessity of distinction between figure and ground for normal recognition and thus indirectly enable you to visualize the effect of an upset of this relation, I shall show you this figure.

If you look at it naturally, the great majority of you will see two profiles facing each other; some of you, however, will say they have seen a vase.

If you keep looking at the figure passively all of you will see now the profiles, now the vase.

Here you have a typical case of an instability of figure and ground. In normal life we do not encounter such instabilities except very rarely. In the natural situation there is never any doubt as to what is figure and what is ground. If there were such uncertainty it would throw our life into confusion and make purposeful activity impossible. This picture, which I put before you, has of course been designed to exhibit the phenomenon of instability and inversion. But in the normal life of our patients this instability is quite usual and you can imagine what difficulties and errors such a condition must give rise to.

Some examples out of different fields might demonstrate this: some patients can raise an arm only if they raise the other arm or even a leg as well at the same time.

We normal people can look at objects from the corner of the eye without moving the body, not even the head. Some of our patients will be able to look sidewise only by twisting their heads and bodies in the same direction. These are examples of the leveling processes.

A more extreme case of the same process is illustrated by pa-

tients who are unable to recognize a picture because its contours do not stand out for them accurately from the background. They behave about as we do in the presence of a puzzle picture we have not yet solved.

If in reading, figure and ground become blurred, the letter will not stand out sufficiently to be recognized. In a given case this might lead to the impression that the patient has lost the meaning of the letters. But that it is not the case we can prove in the simplest manner. All we need to do in this case is to color the letters. This change restores reading ability. And why? Because the bright color has intensified the relief of figure from ground. The blurring in varying degrees of the distinction of figure and background expresses itself in many clinic symptoms; phenomena such as mistakes of identification in so-called agnosia, in false movements, in so-called apraxia and so on. In the course of subsequent lectures we shall take up a number of symptoms that are rendered comprehensible by our assumption.

The figure and ground pattern of the various performances is of varying degree of complexity. Some patterns are more difficult than others. A substrate damage of a certain degree will of course affect the more difficult pattern more than the relatively easier ones. This produces a quite well marked scale of disintegration.

One may generalize the following rule: a performance will be the more difficult the more individual components one is desired to discern and treat as a whole in the reaction. The performance will be easier the more readily one can react to the total configuration as a single stimulus. Performances which demand the first attitude are more disturbed than those which demand the latter. Since, when the figure and ground relation is altered, the individual components of the figure do not stand out as well as under normal conditions, the patient suffering from such disturbance will have corresponding difficulty already in picking out those components. It is characteristic, therefore, that patients failed in performances which required that single elements be lifted out from a whole; for instance, a patient who on demand will show his hand is incapable of showing a single finger. The same cause underlies the patient's being unable to localize a sensation. He feels it but cannot tell you where.

We can formulate the fact also from a different angle. We can say the performance is the more difficult the more it demands that one take account of what one is doing, and the easier and more directly without mediating reflection one can proceed. Tasks which demand reflection for execution will suffer more than those that can be executed more unthinkingly. The one attitude we may designate as the volitional and the other one as the automatic attitude. One may say that each and every damage to the brain affects the volitional attitude more than the automatic.

A patient getting angry over something has no difficulty at all in assuming a threatening attitude but he cannot demonstrate how to threaten somebody. He can count—say the parcels collected on a shopping trip—but he is unable to count at all in the absence of a concrete situation that of which counting is a part. Here, too, the patient is incapable of the abstract separation of an element from concrete contents.

Here I would like to include also the example Dr. Cheney has given to you in his first lecture. You remember the patient who was able to memorize the name and address of his daughter only in a special situation in which the name and address fitted but he was absolutely unable to repeat this achievement demanded of him in the examination.

The impairment of the ability to single out elements from a complex in a well-known test may lead to results which will be at first difficult to understand.

In the so-called Bourdon test, for example, in which certain letters must be crossed out, the patient will do markedly better with nonsense words than with an intelligible text.⁶ This may at first be very puzzling. From our point of view, however, the cause of the patient's behavior is quite obvious: when he has nonsense words before him all he needs to do is to look for the letters he has been told to cross out. In the intelligible text, however, first he will have the tendency to read the words and must then pick out the letters to be crossed out from the words and that gives him difficulty. That this explanation is correct is confirmed by this fact: if the patient is instructed to disregard the meaning of the text, his performance immediately improves and will indeed equal that with nonsense

words. The achievement of a normal person would be pretty much the same in either case. That the patient exhibits such marked difference should caution us in the employment of tests in examination of patients.

Tasks which require the lifting out of a number of particulars and combining these into a whole, offer the extreme difficulties. In such performances we, therefore, find the patient's failure to be most marked. Such performances consist, for example, in composing pictures from parts or words from letters.

Difficulty is aggravated in every task requiring use of memory material. Not at all because the patient's memory has been enfeebled but because it is very hard for the patient to make a selection from any material that is not quite concretely presented to him.

A sound judgment of the patient's disturbance is accordingly possible only if every one of his performances is carefully analyzed with reference to the point mentioned. In connection herewith it must be kept in mind that apparently identical tasks may be executed in a varying manner, even by normal persons. It is only natural then that patients, even when their disturbance is the same, should differ one from the other in executing one and the same task. This consideration applies also to the interpreting of test results.

If we regard a multitude of various symptoms from the viewpoint here developed then these symptoms find usually their simple explanation—symptoms to account for which all manner of separate disturbances have been assumed or failing this have been left entirely unexplained. In passing on any single performance it is necessary to take into account moreover the guiding principles which we developed in our first lecture. Above all it is necessary to hold in mind the patient's tendency to dispose of a task set him, because, required to act, he dreads non-performance as threatening the catastrophic situation. Hence the patient turns to whatever he can do. He is then most likely to do something incongruous to the task but that does not make a difference to him because very often he is not aware of the incongruence. All he is concerned with is to "get done."

I should like to make this position more concrete by the introduction of further examples.

We have already seen that our patients fail in tasks with short exposure. We observe the same on the exposure of unfinished pictures, such as the so-called Heilbronner pictures. Such pictures involve the task of going beyond the elements actually presented and reflecting what these elements may mean. Since the patient is incapable of such reflections, he fails. Since he feels himself compelled, however, to give some answer he will respond with a reaction induced in him by the picture as it is. Of picture No. 1 of the Windmill series he says for example, "that is a coffee pot." True, the picture has some resemblance to a coffee pot, but a normal person would first of all have expressed his uncertainty. He might say, "it looks like a coffee pot but I don't know." The patient, however, cannot admit uncertainty at all. He must take a positive position and so he says decisively "that is a coffee pot." His answer once given determines all he has to say of the succeeding pictures of the series. He will stick to it. "This is a coffee pot." The gradual additions to the design which to us make the windmill quite unmistakable appear to him as ornamentation and elaboration of the coffee pot. The base of the windmill he declares as the pot's double bottom. When the wind appears he says, "I don't know what those two lines mean but it is a coffee pot." His assurance is not to be shaken, but no sooner have trees, a road and figures been added so that the picture now represents a landscape with a windmill, than he exclaims, "that is a windmill."

What explains the patient's puzzling behavior? Why could he not recognize the perfect windmill and did miscall it a coffee pot, and why did he all at once recognize it as a windmill in the last picture?

He mistook the windmill because having thought in the beginning a coffee pot was intended he was compelled by his pathology to stand by this idea through thick and thin. He may occasionally show signs of hesitation, he may get the uneasy feeling that there is something wrong, but he would rather fall back on all sorts of subterfuges than change his opinion, manifestly because every

change of the situation exposes him to the risk of saying something false and thus finding himself caught in a catastrophic situation. Under such circumstances the patient is apt to say things which are customarily considered as being confabulation. But these supposed confabulations by no means express fertile imagination.

The recognition of the windmill in the last picture is due to the fact that the last picture presented the windmill in a setting which the patient could take in as a whole. That presents to him really a new situation, namely, a landscape with a windmill in it. Now he recognizes the windmill.

This finding is particularly significant in illustrating the fact that recognition or non-recognition depends not upon the relative number of the elements which can be discriminated but on whether the conditions are of a nature to directly elicit the correct reaction or not.

A further instructive example of the occurrence of mistakes. To a patient a picture is shown showing two lads playing football. One of them has just kicked the ball, his leg is still raised and the ball is in mid-air. The patient takes a look and says, pointing to the ball: "There is the moon." No hint succeeded in making him understand the picture. When the two boys were pointed out to him he said, "Yes, there are boys," but to him they had no connection with the moon and did not cause him to change his meaning about this round yellow thing that he has designated as the moon. It took a great deal of effort to explain the picture to him. This example is strikingly instructive. The subject is so exceedingly simple and well known to the patient. Once a reaction has taken place it is nearly impossible to get him away from this reaction. He persists with extraordinary tenacity and so a correct recognition will be prevented. The patient's answer, which at first seems nonsense, becomes understandable when we can discover what has caused the patient to give that answer.

If one tries to help the patients one may better their performances but also easily lead them astray. In the latter case there will appear manifestations of what we are accustomed to call abnormal suggestibility.

We have chosen our examples chiefly from the domains of per-

ception and action. But we find modifications of the same kind where thinking and feeling are involved. Disturbances of thinking in organic diseases as well as many anomalies observed in thinking of maniacs and schizophrenics may find their elucidation in our viewpoint. I cannot go into this part of our subject but recommend to you to apply these principles in the analysis of these phenomena. But I cannot resist the temptation to give at least a small extract from the case record of a schizophrenic, because his statements so beautifully illustrate the alteration of the entire world of experience through the upset of the figure and ground relation. The patient⁷ says: "Everything I think of always gets away from me." Here we have the instability of the figure. "Everything in me is changing continually." Here we have the oscillation of figure and ground, "Strong and weak, now this way, now that way. One does not know what's coming; one is completely powerless"—here we have what we have called "being forced by the stimulus." "The air is still there, the air between the things in the room, but the things themselves are not there any more." What a beautiful instance of the inversion of figure and ground.

A few words in concluding on disturbances of the emotions. One will find again and again the fact that the same patient, who appears dull, untouched by the world, suddenly shows intense emotional excitement. Both aspects are made comprehensible by our view. The patient is indifferent because many things in his environment which normally must arouse interest and emotion are not apprehended by him. His world has been narrow with respect to the emotions too. If the patient falls into emotional excitement it will be found that it is the expression of his having been compelled to take a stand toward the situation with which he was not really able to deal. His excitement was only an expression of being in a catastrophic situation or of his apprehension of fear that he might be pushed into such a situation.

One example:—A patient of mine had a friend who was his close companion. One day the friend went to a moving picture with another man. He did not take our patient along because the latter had seen this picture before and would not go to see it a second time. When the friend came back from the movie our patient was

in the greatest excitement and refused to speak to him. He was not to be quieted by any arguments. No explanation that his friend did not want to offend him, that his friendship had not changed, made any impression. From that time on our patient was his old friend's enemy. This reaction at first so unintelligible can be understood if we remember that the patient is able to make only a direct concrete approach to any situation. This is also the case in his approach to his friend. He saw only that his friend was keeping company with another man and he felt himself slighted. He was unable to understand what had prompted his friend to go without him and that his friend's conduct actually in no way affected their relations. He could not understand the situation as a whole. He saw only the concrete separation between himself and his friend and from this standpoint his exaggeration was thoroughly understandable, particularly if we consider how difficult it is on account of the change in the attitude for such patients to enter into the relation of friendship. The patient felt his loneliness, dropped into a catastrophic situation of confusion and anxiety. He regards his friend as its cause. This insight into the working of his mind renders his behavior thoroughly intelligible.

Our last example brings out very strongly how very important it is for the treatment of such patients to interpret their behavior from this central standpoint: "Is this situation, which the patient faces, one with which he can deal considering his specific disturbance, or not?" Whether a patient exhibits excitement or calmness depends in large measure on whether the people around him have understanding of the structure of his behavior and the ability and possibility for adapting themselves to it. It will be clear to you, I dare say, that we are here not dealing with theoretical speculations for theory's own sake but our theoretical investigation aims at and directly runs into the very heart of medical practice.

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SIMULTANEOUS PSYCHOSES OCCURRING IN BUSINESS PARTNERS

A Case Report

BY H. BECKETT LANG, M. B., F. A. C. P.,

DIRECTOR OF CLINICAL PSYCHIATRY, PILGRIM STATE HOSPITAL, BRENTWOOD, NEW YORK

Similar or simultaneous psychoses occurring in individuals of the same family have been reported in the literature. Other cases have been of the folie à deux type, not necessarily being in relatives but in individuals closely associated who showed an adoption of the trend by the second individual.

The following case report deals with the psychoses of two individuals who were in the same occupation and exhibited an affective reaction with schizoid coloring. The psychoses occurred about the same time. The reaction in affect and content was similar but was not adopted by the second patient from the first. The precipitating factors were apparently the same for each individual, but the deeper etiological factors were dissimilar.

CASE ONE.

B. C. was admitted to the Willard State Hospital, December 9, 1930.

Family history: Father and mother are of Italian peasant stock. There were 12 siblings. The first one committed suicide; the second never developed normally; the third was killed during the late war; the fifth died in infancy and our patient is the sixth. The remaining children are alive and well, apparently well adjusted.

Personal history: The patient was born in Italy in 1896. He assisted his father on the farm. He obtained his schooling by his own efforts and was able to read and write at the age of 13. He came to New York State in 1915. He spent two years learning the barber's trade and since that time has worked as a barber. He managed to accumulate sufficient money to purchase a one-half equity in a house valued at \$8,000. He was married to an Italian girl after a hurried courtship. There are three children, all boys, living and well.

Personality of wife: She is excitable and critical, a fair manager of the home, but is inclined to believe in her husband's ability and

his expansive ideas. She refused to accept the fact, at first, that he was suffering from a psychosis. Married life has not always been congenial and shortly before the acute onset of his psychosis, the patient accused his wife of infidelity.

Personality of patient: He has always been an ambitious, hard-working, industrious barber, a ready mixer, pleasant and agreeable. In his business affairs, he has been inclined to an expansive attitude and has not always shown good judgment. He has occasionally indulged in alcohol, but never to excess. Psychosexual development was apparently normal.

Onset of psychosis: In September, 1930, J. B., (our second patient), who was also a barber, was in financial difficulties. He knew B. C. through being in the Barber's Association. J. B. borrowed money from B. C., and the latter suggested they go into partnership, but no articles were signed. The business seemed to be flourishing quite well, but B. C. was noted as being restless in that location and finally induced J. B. to move to a new shop where they did quite well. In November, 1930, B. C. developed the idea of starting a barber college. His ideas were apparently normal but were slightly expansive for the period of depression which was then affecting all business in his locality.

He claimed to have sufficient money to finance the college. His partner verbally agreed to the plans so arrangements were made. B. C. ordered lavishly and in December, 1930, the two partners went to Chicago where B. C. expected to induce manufacturers of barber equipment to allow him to have the chairs and utensils for advertising purposes. When this was refused B. C. became restless, overactive and overtalkative. He began spending money foolishly. The two returned to their homes where B. C. began sending telegrams in an attempt to borrow money. Finally on December 8, 1930, he became so disturbed that he required hospitalization.

On admission: He was excited and expansive. There was a marked euphoria and overactivity. Sensorium was clear. His behavior was in accordance with his ideas. Mood and affect were in accordance with his productions. The initial excitement cleared somewhat.

Trend: This showed a group of expansive ideas.

1. He claimed that his barber college would return \$200 a student and that he would have hundreds of students.
2. That he had plenty of millionaire friends and that he could raise a million dollars on his notes and insurance.

He also showed a mild projection as well, claiming,

1. That a group (unknown) were working against him so that his work went for nothing.
2. That his wife must be interested in some other man as she would not mortgage the home or in any way help him with his new project.

On December 15, 1930, upon the urgent request of his wife, he was paroled to her care. At that time he was expansive, but his behavior was fairly normal.

On January 31, 1931, he became very much disturbed, tore his clothing, threw dishes about the room, soiled himself and bedding. He was returned to the hospital, where he remained violent, assaultive, untidy and destructive. By this time, his partner was on the same ward with the patient and when the patient saw him, he exclaimed, "They fixed him too, they are all against us, I know who did it." The patient refused to explain his remarks. This was the only definite paranoid statement that he made during the time he was under observation.

Physical examination: Of the pyknic type. Height 5 feet 5 inches; weight 186 lbs. There was no evidence of acute or chronic organic diseases. Blood pressure was 118/80. Serology and urinalysis were negative.

On February 25, 1931, he was transferred to another hospital upon the request of his wife. His actions at that time showed that he had lost insight into his condition. Judgment was defective. Behavior was more disordered. He was untidy and frequently unclean. He would spend hours staring in front of him; was unresponsive to questioning; was surly and disagreeable. He constantly blamed his wife for not getting him out of the hospital. The diagnosis made at the time of first admission was that of manic-depressive, manic type, but in view of the later regression, the diagnosis of schizophrenia may be suggested.

CASE TWO.

J. G. was admitted to the Willard State Hospital, February 10, 1931.

Family history: Father was born in Italy, is living, in good health at the age of 61. He is a moderate drinker and has a quick temper. Mother was born in Italy and is living at the age of 51. She is considered as of a nervous temperament and is inclined to become quite emotional, depressed and to show anxiety as family difficulties occur. Five brothers and one sister are living and well; are either working or going to school.

Personal history: Patient was born in New York State in 1904. He did not complete high school until 1924, as he was assisting in his own support and could not attend regularly. He studied the barber's trade and since 1926 has worked as a barber in a shop owned by his father. He managed to support himself until his marriage, which was in 1928. He has indulged frequently in alcohol but has never been intoxicated.

Sexual history: He masturbated, but stopped at the age of 15. At 18 he had his first heterosexual episode with a married woman from whom he acquired a urethritis which responded to treatment.

He became secretary of the Barber's Association of his locality and was very well thought of. Prior to his marriage in 1928, he frequently attended social affairs with the girl whom he later married. He did not seem much interested in others. They had intercourse and she became pregnant. With his consent and knowledge, she had an abortion performed. Shortly after this abortion they were married. There are now a son and a daughter both living and in good health.

Personality: He has always been nervous, quick-tempered, inclined to be seclusive. He would not talk about his personal or business affairs with his family.

Personality of wife: She is irritable, selfish and is given to frequent temper outbursts. She does not care for her home or children properly and since her husband was admitted to the hospital, she has not visited him nor cared for the children.

Onset of psychosis: As referred to in the case above, J. G. was in financial difficulty, because of the fact that he had been borrowing money to pay for the medical attention required for the abortion. He was also living more expensively than his income warranted. His wife's people frequently visited them for long periods and this caused him more expense. The patient, as secretary of the association, had access to the funds and had used some of these. When the family learned of this, they loaned him the money to replace the deficit. The patient did not seem agitated or worried over this at that time.

It was about this time that B. C., our first patient, came into partnership with J. G. J. G. did not seem to realize that B. C. was mentally disordered. He believed him in spite of the fact that J. G. was losing money under the arrangement. After their return from Chicago and B. C.'s commitment to this hospital, bills for the work began coming and J. G. was threatened with suit. He began to worry, and became anxious and fearful. He neglected his business. He then attempted to get a separation from his wife. In order to meet the bills incurred by the partnership, J. G. tried to borrow money from a cousin, a man for whom he had a very high regard. This cousin would not loan him the money unless J. G. explained the full details—which he was unwilling to do. J. G. became excited and restless. He finally complained to his bother and the brother saw the cousin and obtained the funds, unknown to the patient, but the patient had become confused and accused his family and others of being in league to destroy him.

On admission: He was confused, restless, agitated and fearful. He was overproductive, at times so much so that he was incoherent. He was able to give correct data as to personal and family histories. He would discuss his marital life, but could not give a clear account of his business affairs. He made a childish attempt at suicide and when discovered appeared to be in complete panic. He remained in this state for a few hours and then appeared to clear a little. Two days later, he again developed a more acute confusion, which was recognized as delirium, and he was found to have a temperature of 103°. He was suffering from influenza. During the attack of influenza he cooperated very well; the content of his de-

lirium was concerned not with his immediate worries, but with events which happened in childhood. Following his recovery from influenza, he again showed confusion, irritability, anxiety, fear and panic.

In affect: He showed depression alternating with rages. His mood was unstable. He was disoriented and would not cooperate in any general examination. He had no insight into his condition.

Trend: He claimed that his family were in league to destroy him. He accused his cousin of attempting to destroy him. He would give expression to depressive ideas such as "If you are going to take my head off . . . take it off . . . I am finished . . . I don't want to worry my mother . . . my wife has turned me down . . . the truth was known before I knew it."

Physical examination: Of the athletic type with a tendency toward feminine build. Height, 5 feet 10 inches; weight, 157 lbs. Blood pressure was 118/96. He apparently recovered from the influenza. There were no acute or chronic organic diseases referable to any of the systems. Serology and urinalysis were negative.

This case at first suggested an affective reaction with stupor, so that the preliminary diagnosis was manic-depressive, mixed. Subsequently, in his productions, he became more incoherent. In behavior he would sit calmly in a chair and address the physician as follows: "How are you? . . . let's go . . . all I have to do is to wish a thing . . . don't you?" When questioned as to his family, he immediately became quiet and refused to answer questions. He was constantly glancing quickly about the room, but was no longer assaultive nor interested in any of the other patients' actions. He appeared alert, but his concern with his own ideas was such that what was going on in the ward apparently did not penetrate his attention. He complained that he had not received letters and considered there was no necessity of his writing as his family and everyone at home, as well as the physicians, knew what was going on in his mind.

On April 3, 1931, for the first time since admission, he showed a clearer insight. He was oriented, but memory was not clear as to the physician who had treated him. He felt that he had been very sick and that the cause of his illness was worry over two facts, first

his participation in the criminal abortion and second, his involvement in the financial loss of the barber college with its effect on his social standing. He stated, however, that he was made aware of all that was going on by the voice which whispered to him. This he told in a cheerful tone and in the attitude of an observer rather than of a participant. The progressive development of dissociation of mental content and affect is considered indicative of schizophrenia rather than of the first diagnosis of an affective reaction.

COMMENT

In the cases reported above, we have two individuals both of peasant Italian stock, both born into large families. One (B. C.) shows a predominance of extraversion tendencies and a drive for dominance. The other (J. G.) is more introverted and tends toward submission. With B. C., marital life was of fair adjustment, with J. C., marital life was one of poor adjustment. Personality of wife in each case showed instability. B. C. was respected in his community and considered a "good fellow" and a law-abiding citizen. J. G. was also highly thought of but was involved, first, in an abortion and second, a theft of funds from his association.

In business, B. C. was the more aggressive, but showed poorer estimation of the business situation while J. G. was more capable and productive in a small way, but unable to handle his personal finances or the enlarged business. Both reacted with a psychosis to their business losses. Each at first showed the affective disturbance more prominently but each later developed malignant symptoms. Both showed projection, the first assigning the reason to an indefinite group, the second specifying his family.

Each showed vague ideas of infidelity on the part of his wife. B. C. expressed his, while J. G. attempted to secure a separation from his wife, later giving expression to ideas of infidelity.

The prognosis in both cases is considered to be grave.

Summary: A report of two cases is made in which the common precipitating factors were due to business losses. The psychoses occurred within two months of each other. Both cases showed at

onset an affective type of psychosis, the first being excited, euphoric and expansive, the second being agitated, fearful and depressed. Later, both developed malignant symptoms with ideas of persecution and infidelity and with regression.

TECHNICAL APPROACHES USED IN THE STUDY AND TREATMENT OF EMOTIONAL PROBLEMS IN CHILDREN

Part One. The Story, a Form of Directed Phantasy

BY J. LOUISE DESPERT, M. D., RESIDENT IN PSYCHIATRY, AND
HOWARD W. POTTER, M. D., RESEARCH ASSOCIATE IN PSYCHIATRY,
PSYCHIATRIC INSTITUTE AND HOSPITAL, NEW YORK CITY

I. *Rationale:*

It is generally agreed that the direct approach to children's problems is not only disappointing, but often not workable, and that occasionally the sole result thereby obtained is to induce a negative attitude in the child, an attitude which not only blocks the release of his feelings but also deprives the psychiatrist of his chance to gain insight into the problem. On the other hand, it is found that children with behavior or neurotic disorders are able to express spontaneously their feelings, if an opportunity is given them, through the use of an adequate medium. The medium reported upon in this communication is that of the story. The writers have been frequently impressed by the distortions that children introduce in their account of popular stories. A careful analysis of these distortions reveals that the change made, quite unwittingly, by the child, is in some way related to his own underlying emotional conflict which he expresses in an indirect and symbolic way.

As a result of this observation a systematic approach was devised to ascertain the value of the story as a means of investigating psychiatric problems in children.

II. *The Clinical Material:*

Twenty-two children were studied, 6 girls and 16 boys, all patients on the children's service of the Psychiatric Institute, their ages ranged from 4 years, 0 months to 13 years, 11 months and their I. Q.'s from 83 to 114. The patients presented problems of varying degrees of severity, classified diagnostically as follows:

(a) Primary behavior disorders	16
Conduct type	13
With neurotic traits	3

(b) Psychoneuroses	4
Psychasthenia	2
Anxiety	1
Obsess. comp. type	1
(c) Psychoses	2
Dementia præcox—heb.	1
With convulsive disorders—epilepsy	1

III. *Description of Method:*

The method devised for this study makes use of three types of stories:

1. Popular stories (fairy tales) known to patients and reproduced by them at request of physician. In this group belong:

- (a) Story of the Big Bad Wolf.
- (b) Story of Goldilocks and the Three Bears.
- (c) Story you like best of all stories you have ever heard or read.

The first two were chosen because they seemed to be the most widely known. The third was found in a few cases, to include one of the first two, especially among the boys.

2. Stories made up spontaneously by the patients, on a theme given by physician.

- (a) Any story you wish to make up.
- (b) Story about a boy (or a girl).
- (c) Story about a father, a mother and as many children as you want.

3. A story made up by the physician, told by the teacher to all the children, and later reproduced (in writing) just for the teacher; finally, after a period of several days, the physician asks the child to tell the story again.

(a) The first version (written in class for teacher) will be called the "formal version" because it was concerned chiefly with form, composition, etc.

(b) The second version, given out orally to the physician will be called the "emotional version," because it was a more spontaneous and free expression, and concerned itself not at all with form.

This story which illustrates familial relations is entitled "The Story of John and Mary."

"Once upon a time there were two old people who lived in a little house in the country with their son John. John was 25 years old. One day, John told his parents that he wanted to marry a girl named Mary. He said she was young, pretty and very nice. How do you think the old people felt when John told them that he was going to leave them after he got married? (pause). John's parents liked Mary very much and they said, "Why don't you live with us? John has his room all fixed up and everything would be so simple!" Mary said that she wanted to make her own home, so they got a nice little apartment, oh so little and so nice and it was *their* apartment. They were very happy; they never had a quarrel. John went out to work and Mary kept the rooms nice and clean. Then, they had a baby boy. John wanted to call him Nathan like *his* father and Mary wanted to call him Robert like *her* father; then they decided to call him John like *his own* daddy and everybody was pleased. Johnny was nice and strong, but he cried a lot. His mother was feeding him, how do you think? (pause). Everything he wanted, she got for him. She bought many toys for him. She really spoiled him. Then, she was always afraid for him. She would say, 'Now Johnny, you must be very, very careful or mammy would be so worried.' Do you suppose he liked it? (a pause). But his daddy was not like that. He was very strict; sometimes he slapped Johnny and Johnny cried, 'mammy, mammy!' Why do you think he called for his mother? (pause). He was oh such a big boy already, walking and all that, when his mother said, 'how would you like to have a baby brother?' What do you think he answered? (pause). Well, one day *there* was a baby brother in the house, a tiny, red-faced baby, just like a doll. Was he happy about that, just guess? (pause). His mother said, 'You must be nice to little Frankie. He can do nothing for himself, just the way you were when you were so little. You were just like him, can you believe it?' (pause). Then the two boys grew, and grew! And it was such fun to see them play together all sorts of games that they made up. What games do you think they liked best? And their father and mother were so happy to see them get along so well together."

In carrying out this method of approach, the contact between physician and patient is the first point to consider. The former

should not inhibit the latter; this is more likely to happen, as pointed out previously, with the direct than the indirect approach. Often a child who is disinclined to talk about himself will talk freely about an imaginary individual who, notwithstanding, is obviously himself. Since the therapist was quite familiar to all the children included in this study, contact was easily established. It was essential also, owing to the suggestibility of children, to avoid all immediate outside influences which might modify the spontaneous trend. Such influences might come from two sources: the other children and the examiner. By preventing communication between the children throughout the duration of any one test, the first was easily controlled. To control the examiner's influence was a more difficult problem. Although the physician must remain objective and refrain from making any suggestion, he cannot remain altogether passive; he is brought in to participate at certain times. For instance, some children have no confidence in themselves, they will start right out with "I can't" which seems final, but one may need only to say, "Suppose I help you—once upon a time there was . . ." to get them started. Then again, a child may become blocked owing to the very nature of the emotional trend he is trying to put in words, and a "Then, what happened?" said in a detached tone, may be sufficient to reopen the flow of verbal expression. Then, too, there are a few children who ramble away from the subject; they should be allowed to do so, but from time to time the question "What did I ask you?" should be introjected. In the majority of the cases, it is sufficient to state the request at the outset, whereupon the child becomes immediately responsive, for children as a rule are fond of telling stories. It is also necessary to ascertain if a story considered "popular" is actually known to the child; however, even if the child has only a fragmentary recollection of it, the story need not be excluded, as the "memory selections" as well as the filling in or substitution by the patient are of significance. Each child in turn is brought into the office and after a friendly word of introduction, asked to tell the physician a story. With younger children it is sometimes necessary to explain that they are to make believe anything they want about anybody, or about a boy, etc. The therapist indicates that he will write the story as it is

given. As a rule, the children did not object to the writing and the stories were taken down verbatim. It is not sufficient to get the general trend or impression of the story. Details which may appear trivial are often extremely meaningful. Every introjection, however irrelevant it may seem, should be recorded and the mood, or accompanying gestures, noted as well.

IV. *Case Material:*

Due to limitation of space, only a few cases will be analyzed here. These, however, are representative of the general findings and illustrate the value of this approach in the investigation and treatment of emotional problems in children.

Joseph, No. 2151, 9 years, 0 months, the last of three children in a Jewish-American family of marginal economic status; brought to the Psychiatric Institute by his father on February 20, 1936, with the complaint that the boy goes into wild rages in which he is violently assaultive toward his mother; behaves well in father's presence. Fights with older brother, 22, but gets along fairly well with sister, 17. Is asocial and has no friends. Thinks a gang is after him. The family have known better days. The father, once a financially successful opera singer, has been recently forced into minor dramatic acting and music teaching, is an obese, expansive, egocentric, domineering individual, feared by the patient. The mother, who married against her family's wishes, has been disappointed in her marriage. She is tense, anxious, has at various times experienced hysterical paralyses, choking sensations and feelings of depression, mostly in relation to her son's difficulties. The boy came late in the marriage, was so unwanted by the mother that she attempted an abortion. The birth was uneventful and the early physical development normal. Toilet habits established with considerable difficulty. Soiling, though infrequent, is observed even to date, and enuresis has been almost constant. Mother oversolicitous. Up to time of admission the patient slept in parents' bedroom. Temper tantrums and destructiveness began at three and one-half years of age. He has an intense curiosity toward objects which he pulls apart and thus renders useless. He has become increasingly disobedient and aggressive toward his mother whom he often attacks with his fists. At other times he is overaffectionate toward her.

At school, though his work is good, he is poorly adjusted. He claims that a boy who does not like him, has formed a gang which is "after him" and he will not go out of the house alone because of this gang. Positive physical findings on examination: Adiposity suggestive of Froehlich type, right chronic purulent otitis media; myopia and a certain awkwardness of gait; I. Q. 107. When interviewed, he substantiated the mild persecutory trend related above, but on the whole was not productive. According to his own account he gets along well with everybody. The only trouble is that people "start up" with him, namely, his brother and boys at school or in the neighborhood. He says he loves his mother and does not refer to his belligerence toward her. His only early recollection is colored with anxiety and relates to a hypothetical robbery which presumably took place in his own home. His mother and grandfather are related to this memory in a rather vague way.

With this boy, one feels fairly sure from the start that a direct approach will be futile. On the other hand, his phantasying in story form is quite illuminating—for instance, his version of the "big bad wolf."

"Once upon a time there were three little pigs, two were singing songs. *The third was building houses.* There was a big bad wolf *who was poor* and had three sons. The two little pigs who were singing wanted to learn some more songs, *and the third didn't like the songs.* The wolf heard it, and he *disguised as a teacher* and his three little children, two disguised as boys, one as a girl. Then the wolf made believe he was a teacher. Then he *captured them* while he was giving them singing lessons."

In this story, as well as in several others elaborated by this boy, the principal theme is that of a powerful adult male (man) who is a threat to his offspring (child). The wolf is easily identified as the real father, even to the extent of similarity of profession. Other points for identification are the poverty (Joseph's father is forever comparing the need of today with the splendor of his past), the "disguise" as a teacher, the number and sex of children.

Another striking feature of this story, also present in others, is that out of three pigs (one is tempted to write *siblings*), there is an odd one; the third is decidedly out of alinement with the other two.

He will not participate in their activities, in fact he openly expresses dislike for these activities, and it is no coincidence that what he particularly dislikes is music, the life work of Joseph's own father. The affect liberated here is obviously hostility toward the father.

To anyone concerned only with logical thinking, as found in adults, there might appear to be a confusion in the fact that Joseph introduces two sets of siblings. This need not disconcert us, however, if we recall what Piaget has described as egocentric thinking, a mode of thinking situated between the autistic and the social, and which is characteristic of children. Here is a young child who is confronted with the task of describing in definite terms a concrete theme. Incapable as he is of handling the material in a synthetic way, he uses freely the process of juxtaposition. Since he does not relate the part to the whole as he goes along he adds an item here, corrects another there, returns once more to the first, and so on, without any awareness of what the adult would call a contradiction in terms. His phantasies (autistic thinking) seem to be on the way constantly.

This is very apparent in the above story; there is, in an almost rhythmic way, a play between the real and the phantastic elements. With this in mind, one could rewrite the story as follows:

Real	Phantasy
Once upon a time there were three little pigs	two were singing songs
The third was building houses	
There was a big bad wolf	who was poor, and had three sons
The two little pigs	who were singing wanted to learn some more songs and the third did not like the songs
	heard it
The wolf	and he disguised as a teacher and his three little children
	two disguised as boys, one as a girl
Then the wolf	made believe he was a teacher
Then he captured them	while he was giving them singing lessons

The demarcation between reality and phantasy is not always as clear as found here, but there is usually present the same weaving in of phantasy amidst real, concrete material. The most interesting aspect of this story lies perhaps in the epilogue, i. e., in the way

the two "singing" siblings are disposed of. A neat way of re-establishing justice in the family, as well as releasing the anxiety which is attached to the threat of "capture."

Looking over this boy's record, which includes all the stories in the series, it becomes clear that the motivation of the child's behavior is not that which would appear on the surface and the later development proves this. The complaint on admission shows his aggressiveness directed chiefly toward his mother. He fears and obeys his father. But when given an opportunity for free expression of his feelings, it is the hostility toward father which becomes prominent. This feeling is consistent throughout his stories, while the feeling toward mother is ambivalent. In one story "any story you wish," a cruel and exacting woman renders her husband very unhappy; Joseph adds thoughtfully "Lucky they had no children," while in "the story of a boy," he expresses the guilt of a boy who did not "appreciate" his mother, as follows: "A story with a boy in it? . . . There was once a boy; he was very poor and very lazy so one day he said to himself, 'Try to get some money,' then the boy tried to get some money by stealing, but he couldn't. The mother went out and she got the money—and after that the boy didn't even appreciate it. This is a story that teaches us a lesson—shall I say what lesson it teaches us? The lesson is that if you are a poor boy and starving and some one gets some money for you, you should always appreciate it. Do you want to hear more of it? (Anything about the boy.) After he didn't appreciate it, the mother turned him out of the house, that means threw him out—so then he knew that he was wrong, that he had not appreciated what his mother did for him—that's all." The feeling of rejection is expressed very clearly.

Barbara, No. 2077, 8 years, 9 months, is an only child in an English-American home, in fairly comfortable circumstances. Admitted to the Psychiatric Institute on November 8, 1935. For 11 months, beginning one month after father's death, she has been inattentive to her environment, laughing and crying to herself, mumbling and carrying on imaginary conversations for hours. Grandparents on both sides show mild neurotic traits. Father a British naval officer, died of tuberculosis when the patient was 7 years, 4

months; sober, friendly, intelligent, ambitious. Happy marital relations. He spent little time at home until 1931 (patient then four years) when following exposure and severe strain on his burning ship, he contracted pneumonia and later developed tuberculosis. At this time he settled in England, where his wife and child soon followed him, the family being confined to close quarters. Prior to this, child had been mostly with mother and maternal grandparents, in America, a stranger to her own father, and resentful of his monopolizing her mother when he was on shore leaves. Became exceedingly fond of father in the last year of his life. Mother, intelligent, imaginative, affectionate, now works as a secretary. Has focused all her love on her daughter. Pregnancy wanted and normal. Early physical development normal. Restless and poorly coordinated as a small child. Toilet habits established early and with no difficulties. Lived only with adults, when placed in a kindergarten at six but did not make an adjustment, cried for mother. Imaginative, especially fond of and believing in fairies and goblins until recently. Child was taken away from her home when father's illness suddenly got worse. She did not see him die, nor did she see the funeral. She asked numerous questions about him when she returned home. Then almost one month after his death, she developed anxiety symptoms. Afraid of heights, irritated by noises. Talked about witches and fairies. Imagined marbles to be people, talked to them as such. Asked to have a sister. Appeared lonely. When a few months later she returned to America and was entered in a private school she could not keep in touch with reality. In a dreamy state, appeared to be hallucinating.

The physical examination showed a peculiar, uncoordinated gait which could not be described as any organic gait. There were almost constant irregularly patterned, purposeless movements of the arms. Mantoux strongly positive, coincidentally with the development of a cervical adenitis while at hospital.

On the ward, she is out of touch. Masturbating in an unconcerned, open, infantile manner. Bizarre movements, talks to "fairies." Looks anxious and preoccupied. Seems to have auditory hallucinations. Variability of mood. Unable to concentrate in the schoolroom. I. Q. could not be obtained.

When asked to tell the story of a girl, she gives the following, "I got a poem, 'When I grow up I shall be a lady and go to work. When I come back in the evening at 9 o'clock, I should tap write (typewrite), then I go to a dance when I grow up.' " (Tell me the story of a girl.) "Once upon a time was a little girl . . . and boy and they went out for a walk in the woods. They picked a bunch of violets and they went home and had supper and after that they had supper, they had potato and meat and cauliflower and then they had dessert—that's the story of the little girl and the little boy."* The first two sentences describe an identification with the mother (the mother does come home late).

But to understand better the meaning of this first story, let us examine what the patient brought out when asked to tell a story "about a father, a mother and as many children as you want." This is what she said, "Could I give you another poem?" (Tell me a story about . . .) "About four children and a lady. The lady went off to work and the children were off at school all day. Then the mother went out shopping and bought meat, and it cost three pounds, and after that she bought kidney and after that . . . there is no father, he is in Heaven; that's the end of the story." The mood was one of preoccupation. Part of the content of this story is obvious, such as the absence of father and the reference to earlier memories of life in the country, but the main trend (and this is found in all of this child's stories) is concerned with food. In other stories which cannot be quoted because they are too extensive, this is still more striking. The phantasying about food finds a parallel in the child's eating habits. She has an enormous appetite. In an effort to understand the meaning of the "food theme," the mother was questioned further about eating habits in the home. She recalled that during the last year of his life her husband had no appetite, would fuss a great deal about food, asking for special dishes, then refusing them. Barbara was greatly concerned over this, would make such statements as, "If you don't eat you will die . . .

*This way of beginning a story "about a child" by the use of "I" is very characteristic of the sicker children. Two other children in this series, who show severe obsessive thinking do the same thing. It is difficult to bring them back to the original request of objectivity. On the other hand two younger boys (respectively 3 years 11 months and 4 years 0 months), with only mild behavior disorders, use indifferently the "I" and the "he," and we know that in children the differentiation between the "I" and "not I" is not established until 3 or 4. Barbara behaves as if she had gone back into a stage where complete differentiation is not achieved.

Please, daddy don't die," etc. She would ask why her daddy did not eat nor work, "like other daddies." She also began at this time to compose "poems that ended always with something about food."

With such material at our disposal (substantiated by other productions) we are warranted in stating that the death of the father has a deeper meaning to our patient than just his removal from the family constellation. Even while her father was still alive, a feeling of guilt was aroused by the erstwhile resentment of his presence which monopolized her mother's attention. Actually her father is threatened with death which is, to her mind, a fulfillment of her unconscious (or preconscious) wishes. Moreover, to her mind, food would save father. Finally her father dies. Her identification with her father, growing out of his intense love of her in the last year of his life, leads her to fear death. Again, if food could save father, food could save her. Thus her food phantasies and voracious appetite are probably on this basis; further contacts with this child have tended to support this conclusion.

Julius, No. 1921, 10 years, 0 months, fourth in a line of six living children, in an Italian-American family of marginal economic status, admitted March 28, 1935. Severe behavior disorder since about five years of age, consisting in destructiveness, cruelty to animals, stealing, fighting with other children, especially outside the family circle, inability to get along in school, where he is over two years behind, I. Q. 83. Family closely knit, from the emotional point of view. Patient the only member to have been a problem. Father a hard working, responsible Italian laborer, very strict with his children. Mother socially superior to her husband, is well adjusted in married relations and her home, is overconscientious, has high moral standards and is exacting in carrying these out. Pregnancy wanted and normal. Great rejoicing at his birth because he was the first boy. Physical development normal throughout. Affectionate, obedient, playful until age of five when a brother was born. Julius displayed no direct manifestations of jealousy toward his brother but the changes in his behavior took place at this time and is also coincident with admission to school. His aggressiveness, sulking and belligerence have become gradually

worse, and have been met by an increasing severity and frequent corporeal punishment on the part of both parents.

This case is especially interesting in that it was through the use of the story that contact with the boy was achieved. During the first month in the institute he was seen regularly by a physician, but the interviews were unproductive as he retreated into a sulky, mute attitude. He became so destructive, breaking furniture, tearing up bed linen, blankets and clothing, assaulting the other children and nurses, that he was almost unmanageable on the children's service.

When asked to tell the physician any story he wanted he volunteered with evident pleasure to tell "the story of the three little pigs." "The story is about the three pigs, the father pig, the mother pig and the baby pig *who was a boy pig*. The *boy pig was very bad* and was *sent away from home*. He went off by himself and built himself a house made of straw. Along came a wolf who blew down the house and swallowed him. The father pig had also gone away from home and had built a house of sticks and along came the wolf and blew the house down and also swallowed the father pig. The wolf then went to the house where mother lived but the mother pig had been much wiser and had built herself a house of bricks. The wolf tried to blow this down but could not do it, then he blew down the chimney of the brick house. The mother pig saw this and set a big cauldron of boiling water under the chimney and caught the wolf in it as he came down. He got scalded to death. Then she took the wolf out, opened his belly and removed the father pig and the boy pig who were still alive and whole. *They were very happy to be together again and they had a party to celebrate.*"

Even isolated from the rest of the material, this story is of great interest. It is no chance happening that it presents in a triangle situation a father, mother and a baby, who, Julius emphatically states, was a "boy." Furthermore, this boy was "bad" and for this was sent away. Having rearranged the characters to suit his needs, Julius now maps the course of events with a happy ending. Thus the feelings of guilt and anxiety find release in verbalization, and the wish for a happy integrated family is expressed in the ending of his story.

From this point on, it was possible for this child to express his emotional conflict which formed the basis for his antisocial behavior. He willingly would come to the office where through phantasy, he was able to express his numerous fears, formerly suppressed, his frustrations, his intense feeling of rejection, his resentment towards his younger brother, and his hostility toward mother and father. Coincidentally, he showed a striking improvement in behavior. His sense of "guilt," so clearly represented in his first story, recurred in various forms, such as "boys sent to a reformatory or a prison"—"bad guys sent to the electric chair"—"good guys rewarded," and so on.

V. *Examination of material from the point of view of structure:*

a. One is impressed by the persistence of what might be called the "theme" throughout all stories told by any one child. This is either a totally mythical, or a half-realistic, half-phantastic situation which spontaneously occurs again and again. If one analyzes the theme, in the light of the given facts in the history, observation of behavior and affective reactions, etc., it becomes obvious that it is determined by the child's conflicts, and as these evolve, the theme is unwittingly modified. To explain: Billy, No. 2066, 4 years, 0 months, I. Q. 98, an illegitimate child, was brought to the Institute because of negativism, frequent temper tantrums, destructiveness. He had been sadly neglected and abused at numerous foster homes. He constantly refers to "somebody" as his nearest approach to a parent concept, in contrast to the average child who introduces a father, or mother, or both. In his phantasies, Billie furthermore visualizes the big bad wolf as a "big girl" (woman) whom a policeman beats up mercilessly. Harriet, No. 1666, 12 years, 10 months, I. Q. 114, four years older than her brother, the only other child in the family, was brought to the Institute because of a shrill respiratory tic, choreiform movements and temper tantrums. There is a long history of rheumatic heart disease, with cardiac damage, and three attacks of chorea at 5, 7 and 9½ years, respectively. The onset of the respiratory tic is associated with the third attack of chorea and was precipitated by a scene related to the mother's absence from home. The "theme" of this girl's stories concerns two children, brother and sister, the younger child invariably a girl,

who is intensely nursed and babied by the mother, while the brother "gets spankings," etc. Whenever the form of the story permits, the brother is done away with altogether. Further developments in this case have shown that the underlying emotional conflict is intense sibling jealousy with hostility toward the mother, who is held responsible for the rejection experienced by the patient at time of her brother's birth. The emotional problem was worked through and resolved and insight was gained through her productions of phantasy material. The reversal of sibling relationships shown here is a common theme.

Other material, obtained from dreams, drawings, etc., checks quite accurately in the same patient with the phantasy "theme."*

b. The productivity is by no means an index of the intensity of the phantasy life; for instance, intense affective reactions associated with very meagre verbalization may be more indicative of a rich phantasy life than abundant productions alone. The children with lower I. Q.'s were less productive even when they did not appear inhibited. They showed a poverty of ideas, as well as a poorer capacity for retention since some of the stories asked for repetition of material. This relation between I. Q. and productivity is clearly brought out by Griffiths.

c. In our group, contrary to Griffiths' findings, the boys were more productive than the girls. However, Griffiths' observations were made on presumably normal children who were also younger than those in our group. Since the boys in our group show more aggression in their phantasies than the girls, it is possible that there is a positive correlation between aggression and productivity. This would seem plausible since we find that the "compulsive" children are also the most productive and express considerable aggression in their phantasies; they appear to be under such pressure that the least encouragement can release a flow of aggression usually expressed indirectly or symbolically. The latter point deserves special investigation.

d. As a rule, the older children were better able to repeat stories with a wealth of accurate details, while the younger children gave a more fragmentary account, as well as a greater emotional coloring.

*A similar observation was made by R. Griffiths in her study of "Imagination in early childhood."

e. The conventional stories consisting of a specific subject matter and form were less provocative and also for the physician more difficult of interpretation. For instance, a title like "The story of a boy (or a girl)" affords complete freedom for phantasy. The second group of stories was especially provocative.

f. A point of considerable interest was brought out in the handling of the last story. This was a simple, concrete, realistic account of a boy's life. The formal version, i. e., that given in the classroom to the teacher as a group composition, was found to be a relatively accurate account of the original story with considerable attention paid to form, while the emotional version, that given to the physician in the office, without concern for form, was further away from the original story and approximated the individual emotional trends. To illustrate, the formal and the emotional versions obtained in the case of Harriet (summarized above) are as follows: "Once upon a time there was a man and a woman. They lived in a little town with their son John. One day John told his parents he would like to get married, to a girl named Mary. At first his parents would not consent to him going away, but after he begged a long time they finally consented, and Mary and John were married. Very soon a baby boy was born to them. They were very happy. His mother would pet him and fixed him, they also spoiled him very much. One day his mother asked him if he would like to have a little baby brother. What do you think he said? Soon afterward a little red-faced brother, but very soon he grew up to be a nice little boy and he and his brother would play together, and their mother and father were very happy."

Emotional version given two days later to physician: "Oh nuts! I don't know (laughs, then gets angry). I don't want to go to Miss W., listen to stories and tell them afterwards—Pough! All right—It was about an old lady and an old man—(and what about them?) They had a big son—*they spanked him*—he wanted to get married and *he got another spanking* for wanting to get married. But he got married anyway (smiles)—I don't know . . . (giggles). They had a son, not the moon (disgruntled), then they play—I mean they gave him everything he wanted and then they had another son

—and then both kids used to play together—that's all. Will you want to know a year later, to see if I remember it still?"

Furthermore, because of its realistic qualities, this type of story had very little appeal for them. William, No. 1944, a psychoneurotic child with severe compulsive traits and whose phantasies are extremely sadistic, expressed this quite forcibly. "Some doctor gave her (teacher) that story. They don't give us stories like that in school . . . Oh, that man and lady stuff! . . . I don't like that story, too common! You read about this kind every day. Lots of men they got married, what's the difference? But Tal! there is a story . . . The boy has no father and mother. They don't know where he came from. I like the story of Tal better, any day."

VI. *Examination of material from the point of view of content:*

Since it is not possible to give a complete analysis of all cases included in this series, an effort was made to summarize and classify the general trends, which fall roughly into three groups, expressing:

1. That which the child is afraid of (anxiety).
2. That which he wishes to be, have or do (wish-fulfillment).
3. That which he fears he might do (sadism).

In many cases it appears as if the third is tied up with the second on a deeper level of motivation—that which he would like to do—while in other cases it is difficult to distinguish whether it is a fear or a wish, but the sadistic motive is unmistakable. The anxiety group is sometimes associated with expressions of guilt (for instance with the boy Julius, whose trends are primarily guilt and anxiety) but it is more often expressed without ideas of guilt. These trends were found to be fairly equally represented with anxiety somewhat predominant but this cannot be judged accurately because they are not found in a pure, dissociated form which would permit an accurate classification. Another factor to take into account is the presence, or absence, the quality and intensity of affect which tend to modify considerably the relative importance of the given trend. Furthermore, for reasons which could not be eliminated, the cases were examined at various stages of their course, hospital stay, degree and nature of treatment. This variable could

not be eliminated but an effort was made to evaluate each problem in the light of these factors.

VII. *Discussion:*

Under the conditions described above where inhibition is at a minimum, the story can be considered as a medium for the verbalization of phantasy. In a discussion of phantasy in children, one should refer to the work of Ruth Griffiths.¹ Over a period of five years Griffiths studied 50 children between 5 and 5½ years of age, an equal number of boys and girls, one group of 30 from an urban environment, one group of 20 from a rural environment, and with widely ranging intelligence levels. The children were normal by accepted social standards and attended kindergarten with regularity. She used a technique which included: imagery exercises, ink blot reactions, dreams, drawings and stories. Griffiths states, "Phantasy seems to be the very essence of primitive thinking. It is the child's method par excellence." She conceives it to be a stage preparatory to adult life, rather than a withdrawal from, or a refusal to face reality. Children work through their many everyday problems of reality, and strive toward adaptation to their environment by means of this non-logical, non-directed, non-organized mode of thinking, emotional in nature, which is called phantasy. Numerous are the examples given in this book of such attempts at working through a difficult situation, and one should consult the careful and impartial analysis of her cases to understand how a child usually solves his problem of child-parent or child-sibling relations. Wishful thinking is clearly verbalized and anxiety is frequently stated and restated. Just as with our cases, Griffiths observed that certain children seem to be attempting to familiarize themselves with the object of their fear by bringing it up in their phantasies for consideration, over and over again. Such a restatement of the problem by the child affords a relief of the emotional tension. It is indeed a part of the child's experience, and one need only observe him as he recounts his "spooky dreams" or his terror-laden phantasies to be convinced that he actually relives the affect. This, he does by identification, a familiar mechanism in the child, and one at the basis of most of his development. He identifies himself so intimately with his hero that, having started out to describe

in the third person the fears of an imaginary individual, he will, not infrequently, without being aware of the transition, use the first person, in a sequence which seems to him so natural that it must be brought to his attention before he becomes aware of the substitution. This is especially true of those children whose sense of external reality is not completely achieved, to wit, the very young, and those children whose sense of reality has been impaired by regression, for example, the very sick. Incidentally, this is one aspect of the situation which is of use therapeutically, since by provoking his awareness of the substitution one is able to help him apprehend the nature of his own feelings.

The same mechanisms are at work in the child's statement of his aggressiveness, and also the same therapeutic possibilities. This explains why the "theme," though consistent as to subject matter, shows variations chronologically. It seems at first bewildering that a child should at a few months interval give different versions of a popular story which to all appearances is well known to him. By analyzing the two versions in the light of the child's behavior at the respective times one can see that the change had a meaning and a purpose; for example, a child who is working out his feeling of hostility successfully will, at a later time, show evidence of his emotional change by revising his theme to a less aggressive version. The story can thus be used as a means of checking the changes that may take place at a lower level of consciousness. In and of itself, the verbalization of phantasies affords a release of tension; besides, as he verbalizes, the child is spontaneously impressed by certain analogies between his hero and himself and this can be further accentuated by pointed and timely questions or comments. This enables the child to get some insight into his deeper motivation. For instance, after Harriet had several times described the sibling relation where a girl is constantly babied and a boy consistently punished or done away with, she was asked what could be the meaning of it, how different it was from her relation to her own brother, etc., and it was not long before she could herself apprehend the meaning of her wishes.

It was also observed that a child who has incorporated in his stories earlier repressed memories in an indirect or symbolic way,

is able gradually to recall them in an overt conscious form. This is of importance since it contributes toward his understanding of his actual behavior. It is similar to the recall of earlier memories through free association with dream material. In the child, however, this is a simpler process because thinking is not so fixed and rigid as in the adult. The emotional trends are less inhibited, less altered, they are closer to their original form. In her work with young children, Griffiths has shown how the various procedures of her technique bring out material from different levels of organization, and how the various bits of the data, complement one another, and give a total picture. Griffiths states: "The dreams give a hint of deeper trends. The drawings show the phantasies concretely expressed, while the stories give us the phantasy near to the level of organized thought."

During his early life the child's experience is concerned for the most part with the reiterated testing of external reality. His psychobiologic development and his capacity for social adjustment depend on this direct experience. If external reality is fraught with difficulties, to him insurmountable, for internal or external reasons, or if he is deprived of opportunities in his chances for direct experience, as is the case of children with over-rigid or overprotective parents, he will tend to remain in his own subjective world. This, however, is not entirely possible since contact with the outside is forced upon him by the very nature of social living processes. Hence a cleavage occurs between his external behavior and his inner drives, and this then constitutes his emotional conflict. His drives can explain his actual behavior only insofar as they are recovered in their original form. Any method which permits the uncovering of his deeper motivation will enable the child to understand his actions, understanding being taken here to mean more than intellectual apprehension. The story is one such method, and its judicious use can yield valuable information.

Conclusions:

1. The story is a form of verbalized phantasy.
2. The child reveals his inner drives and his conflicts through this channel of expression.

3. A recurring "theme" is usually found which indicates the main object of concern or conflict.

4. Anxiety, guilt, wish-fulfillment and aggressiveness are the main trends expressed.

5. The phantasies thus expressed check well with material obtained by other means (such as dream material).

6. The "story" approach is most valuable when complete freedom of subject matter is left to the child, but it is also of value when a popular subject is used instead.

7. The "composition" form is in itself inhibitory and free flow of expression is to be preferred.

8. The dull children yield less information than the more intelligent ones, though there is no absolute relation between the I. Q. and the productivity.

9. The story can be used as a means not only of resolving a difficult emotional situation, but also of checking on the development of the problem while under treatment.

✓ 10. A good rapport between child and examiner is preferable, *but not essential*.

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PATHOGENIC EFFECT OF EMOTIONAL SHOCK

BY POMPEO MILICI, M. D.,

SENIOR ASSISTANT PHYSICIAN, KINGS PARK STATE HOSPITAL, KINGS PARK, N. Y.

Sudden unexpected situations, accompanied by strong emotional shock, may elicit morbid mental manifestations ranging from mild states of psychic disequilibrium to the severest psychotic illnesses. Individuals witnessing the widespread destructiveness of earthquake or flood, persons during shipwreck, prisoners awaiting trial, soldiers under shellfire, may react through a crystallization of emotive phenomena with a variety of functional mental disorders. Such emotional upsets, clearly psychogenetic in origin, and in which an external exciting cause may be shown to be in direct correlation with the development of psychic symptoms, are called situational or emotional psychoses. To the suddenness and gravity of the situation and the utter hopelessness of it there appear reactive psychic defenses which may take the form of acute confusional, hallucinatory, stuporous states, ambulatory fugues with subsequent amnesia, delusional systems, buffoonery syndromes, the ecstasies and the other hysterical twilight states.

Intense emotional shock may deprive an individual of even elemental perceptions, transforming him into an automaton, into a state (Dejerine) of psychological syncope. There is, in this reaction, a marked similarity to the instinctive immobility-reaction exhibited by certain animals when confronted with a life-threatening situation. "When the naturalist¹ comes suddenly upon a young sooty tern, under four days of age, it lies stock still (it is capable of very rapid locomotion): it can be pushed or rolled about without explicit forms of response appearing. The moment the intruder moves away, the fledging may hop to its feet and dash away or give one of its instinctive cries. The pattern reaction, that is, the explicit observable reaction, is very simple indeed—a death feint or posture."

Such a state of stupor, with immobility and arrest of ideational processes, is one of the most striking reactions to psychic trauma. Stierlin,² as a remarkable example of this, describes the case of a woman who, at the time of the earthquake at Messina, remained

mute and immobile on her bed at the third stage of labor for three days.

The following case history is presented as illustrative of temporary dominance by the instinctive-organic life and subsequent development of schizophrenia in response to an overwhelming emotional stress.

Anna D was born in Czecho-slovakia 34 years ago, the elder of two daughters of Slavonic parents, Lutheran in faith. Two aunts, paternal and maternal, died psychotic. No abnormalities are known to have been associated with the patient's birth or early development. She attended school for six years, remained at home for two years more, and then, at the age of 14, went to Moravia where for 13 months she was employed as a domestic servant. Her occupation subsequently and up until the onset of her mental illness was always in this capacity. She worked for numerous families in Moravia, Bratislava and Vienna and in 1920 at the age of 18 she came to the United States with her sister. She obtained employment immediately, worked for nine months in one household, for four years in another and then from one to two months in each of many different places because "she was hard to please." In 1928 she went to Europe to visit her parents, returning after six months. Again, until her last position which she left on February 26, 1933, and which she had held for two years, she remained but one or two months at each place of employment.

The patient was described as being of a cheerful, active and friendly disposition, but displaying on occasions violent attacks of temper and stubbornness. She resented receiving "orders" and, although an excellent worker when left to her own resources, showed quickly an attitude of independence and hauteur when disciplined because of some minor infraction of her duties. It was for this reason chiefly, that she found it difficult to hold a position steadily.

She smoked heavily of cigarettes and for a time indulged in a considerable use of alcohol. She was highly superstitious, a firm believer in fortune-telling, and when once, two years before her commitment, her future was read as holding only the blackest probabilities for her, she made a serious attempt at suicide by poison-

ing. In the position which she held for two years following this episode she is stated to have been excellently adjusted and with no symptoms whatever of mental abnormality. For three years before her admission to the hospital she had been engaged but was thought not to have been much interested in marriage. There were no other love affairs.

On the morning of February 26, 1933, Anna was interrupted in the performance of her domestic duties and told that her sister Betty, several years her junior, had been adjudged insane at a psychiatric clinic and that her commitment to a State hospital was imminent. "To Anna, who had been perfectly well in every way, this was a terrific shock, for she was extremely fond of her sister though the latter did not reciprocate in affection. When she saw for herself that her sister was acting queerly she could not bear it. She tried to talk to Betty but could not hold back her tears. She quit her position and took Betty to her apartment to undertake to cure her of her mental trouble. But Betty continued to act peculiar and Anna could not stand it. She became very downhearted, lost her appetite, couldn't sleep, felt all in and could hardly talk. She said she would not live long if her sister became really psychotic. Her despondency became progressively worse. She ate little and spoke less. She didn't care to do anything; just sat in a chair and brooded. She wouldn't go to sleep unless put to bed, and she remained in the same position she was put in without moving. We called a doctor but Anna was very resistive and uncooperative. She kept to her couch, sobbing, grief stricken, dazed. Then Betty was taken to Kings County Hospital and Anna went there again and again begging for her release."

Anna was admitted to the Bellevue Psychiatric Hospital on March 2, 1933. Here, physical examination was essentially negative. She was described as being absorbed, depressed, mute; sitting about staring in front of her, paying no attention to surroundings or to personal neatness, and requiring to be spoon-fed.

She was committed to the Central Islip State Hospital on March 8, 1933, and here too was "mute, inaccessible, extremely depressed, lying in bed in a stuporous state, wetting and soiling and having to be tube-fed."

On March 23, 1933, she was discharged by transfer to the Kings Park State Hospital on the application of her relatives who wished her to be near Betty, who had already been received at this hospital.

Anna was carried into the reception service on a stretcher and put to bed on the ward for suicidal patients. Here she remained motionless, as one dead. She was brought to the examining office in a wheelchair. Toward the mental examination she offered no cooperation whatsoever, but on the other hand, no resistance. It seemed that she was enacting as closely as possible the rôle of a dead person, and, in fact, except for the pulse beat, respirations and the almost imperceptible responses made to the examiner's questions and physical examination, she appeared to be actually dead.

Before the formal mental examination was started the patient's sister, Betty, was encouraged to attempt to obtain verbal responses from Anna. The latter exhibited a fleeting emotional reaction on seeing her sister; tears came to her eyes and her face depicted a transient distress, but she then again resumed her mask-like facial expression of death, and was uninfluenced thereafter for a time by the sister's presence.

Anna remained seated in the wheel chair, her attitude passive, with almost complete absence of spontaneous acts. She maintained awkward, constrained postures limply for indefinite periods with no visible effort to assume more comfortable positions. Defense movements were almost entirely lacking. There was no show of playfulness, mischievousness, or assaultiveness.

Her face looked like the face of a dead person, like an excellently made death mask. Her eyes were kept open and there was no resistance to closing of the lids. Movements of the eyes were obtained on request, her gaze very slowly following the examiner's fingers or moving to look at indicated places. It seemed as though the patient had to strive her utmost to do this, however, as though the work of moving her eyes was almost too great a task for her to perform. The eyes were otherwise fixed straight ahead, staring, unblinking, without indication of furtive glances. The pupils were equal in size and dilated. A continued hippus was present. Corneal irritability was decreased and sensory reaction of the pupils was absent.

She showed her tongue, moved her limbs, grasped with her hands and raised her head from the pillow on command. All of these movements were performed slowly and after a brief initial retardation. Even so simple a muscular response as showing her tongue required a tremendous effort. She would open her mouth slowly and, then, very slowly and hesitatingly, moved her tongue outward a fraction of an inch. Whenever asked to shake hands she attempted to comply, but was able only to move her hand upward an inch or two, whereupon it would fall back lifelessly. She did not show echopraxia, ecolalia or automatic obedience.

Her muscles were relaxed, limp, and her limbs when moved behaved almost as if dead weight, and when released fell lifelessly, the patient then making no effort to move them from the position into which they had fallen. It was not possible to demonstrate *cereas flexibilitas* or active negativism of any muscular group. The saliva was swallowed and *schnautzkrampf* was not in evidence.

Tears came to her eyes when talked to of her sister and her pulse and respirations at these times showed slight acceleration. Other topics elicited no ascertainable response and unexpected stimuli had but little effect. She made no effort to communicate in any way. It was not possible to induce her to write, the pen falling quickly from her relaxed fingers.

Within two days of admission Anna commenced to talk. She remained lying quietly in bed, weak, depressed, unconcerned for the most part as to herself, thinking a great deal of the plight of her sister. Whenever interviewed she always brought forward the sister as the problem to be discussed. She was compliant in every way, cooperative for interviews, her attention easily gained and held, her manner, speech, attitude and general behavior that of a person who had received an extreme shock, who was yet greatly confused under the affect and who wanted a thorough explanation of the situation and help to straighten it out. There was no fear reaction, no manifestation of irritability, disdain or silliness, but a considerable absorption, anxiety, bewilderment and perplexity and her motor activity was decreased.

Following her emergence from the stuporous state there occurred seemingly genuine emotional displays in facial expressions and en-

tire attitude, the patient crying bitterly when talking of her sister and praying fervently that all would turn out well.

She offered little spontaneously but, when asked to give her story, was able to proceed in a logical, progressive manner and to answer questions relevantly, although often after a considerable retardation. She showed transient confusion when certain routine questions were asked and suspiciously demanded the reason for such questions.

She said that she had been perfectly well until told that her sister was psychotic. "It was a terrible shock to me to hear that news. Betty came to see me. She did not act very queer but I saw something strange in her. She was singing a melody of love over and over. I tried to talk to her but I couldn't stop my tears. I said that everything was going to be alright. My employer asked that Betty sleep in the house over night. She slept in another room. Every time I looked at her, she was singing her love songs and looking sad and worried. I made her help me with the work and she did a little. Then she became just like a child. She followed me all over the room but did not touch anything. I couldn't bear it any longer. I told my employer I was going to take Betty to my apartment to keep her, to try to make her well. Here I made the supper and Betty ate and slept alright but soon night after night she got up and walked around. She was singing. She was sad. She turned on the radio. She said she felt funny. She didn't pay any attention any more to the way she fixed her hair and her clothes. For a few days she would not answer me very much. I just couldn't stop thinking of Betty. I was so blue and downhearted. In the middle of the night Betty said she wanted a cup of milk and I got up and heated two cups, thinking that maybe she would drink it if I drank it too, but she didn't want it and I myself couldn't even touch it. Already I couldn't eat any more food. I felt very depressed. I had no appetite. Betty came to my apartment on February 26." As the examiner wrote down the date patient looked startled and said, "That's strange; when you wrote 26 I got a smooth feeling all over my body—that's funny." She continued, "I tried to reason with Betty about being in love with

the dentist but she cried when I talked about him and I couldn't stand her tears. Then I no longer cared to go out myself or to eat. I couldn't sleep. I felt all in." At this point patient again became startled and asked the examiner if he smelled a curious smell that seemed to her at that moment to penetrate into the room, a "smell like urine." She continued, "And then they took Betty away. I hardly knew how to talk. I tried to talk but I couldn't. They brought me to Bellevue. I was afraid there. I just can't explain, like my tongue stuck. In Bellevue at first I was suffering terrible, just heavy all over, no pain. I heard a man's voice questioning. I don't know how to remember. He wouldn't stop. The voice came from far away. I don't know who he was. First he called me 'darling.' Then all the questions. I thought over and over about Betty. In Central Islip I heard the voice too. It commanded me to lie still. I didn't eat because I had said I was going to starve myself to death if Betty didn't get better. I was thinking about God all the time. Over and over in my mind I said, 'God is everywhere, God is love, God is strong.' I had to think of it all the time, the air was so heavy." The patient gave her story with a considerable amount of feeling, her face, while to a great extent masklike, often depicting profound distress. She showed no hesitation in talking over the situation, asked many times to be reassured that her sister was going to get well and she seemed very much encouraged when comforted. At times during her conversation she began to become deeply absorbed, appeared as if she were gradually falling back into a stuporous condition, but she emerged quickly from this state when stimulated and smiled then in a relieved manner. She said that she could not help herself; it was as though some outside influence were forcing her "to go to sleep." Her orientation and remote memory were intact but there was a haziness of recall for more immediate happenings. She expressed great difficulty in concentration in attempting to perform the counting and calculation problems and she wrote very slowly, in a constrained manner and with marked tremors. She could answer none of the general knowledge questions and stated, at this time, that something inside her head was making her think continuously against her will and that it was difficult for her to concentrate on any other subject.

She admitted mental illness, attributed this to excessive shock sustained on hearing of her sister's illness and she expressed a desire to remain in the hospital until she had recovered.

March, 1933: In bed on the suicide ward, very weak, very much depressed, often crying softly and her face depicting almost constant deep anguish. At every opportunity she pleaded anxiously that everything possible be done for her sister's welfare. On the rare occasions when she saw the latter, still exhibiting silly abnormal behavior, she experienced the utmost despair. Following those observations her facial expression at times lost all evidences of anguish, returning to a masked death-like aspect, and generally then for a period, she was inaccessible. She was thus for two entire days toward the end of the month, appearing not infrequently as though she wanted to talk but could not. Later she stated that she could not speak because the air about her had become too heavy.

The most conspicuous factor in her psychosis continued to be a deep depression but she commenced now to adopt a more suspicious attitude toward the environment. She still slept poorly, required spoon and tube feeding and she wet and soiled.

April, 1933: Still in bed, lying like one lifeless, frowning thoughtfully, frequently crying softly and showing a great deal of emotion when talked to concerning her sister or when confronted with the latter. Expressions of deep anguish flashed repeatedly over her face and the complete abandonment to her despair seemed still outstanding. However, she was almost completely mute throughout the month, continued force-fed and incontinent and on one occasion dejection gave way to silliness. She seemed to be totally unable to obey simple commands despite an apparent wish to comply.

May, 1933: She began now at night to leave her bed, to stand about on the ward and to interfere with the sleep of other patients. She resisted the efforts of nurses to return her to bed and shortly was transferred to a ward for disturbed patients. She continued mute, to turn her face toward the examiner when addressed but now making no effort to reply. There was less evidence of a depressive picture at this time, her facial expression being more generally fixed and placid. She was able to feed herself though with poor appetite and she controlled her sphincters. She remained rather

constantly in fixed positions but showed increasing interest in the goings on about her, at first following others with her gaze and after a time she was allowed up and about and she became able to participate in the ward routines.

June, 1933: She was transferred to a pleasant ward. She admitted mental illness attributing it still to the shock she had received. She explained her month of mutism as due to the hallucination of her father's voice commanding her to "keep quiet." She stated that she had been hearing her father's voice from the time of her commitment and she confessed also to a frightening array of visual hallucinations of strange faces and shadows. An annoying thought pressure persisted. However she seemed improved now despite a variety of somatic complaints. She expressed an apparently sincere desire to make a full recovery and she asked if X-rays of her entire body would not determine a correctible pathology.

July, 1933: The depression had now disappeared altogether. Allusions to her sister Betty (already deported to her birthplace) were met with indifference and evasion and every evidence of a true insight was soon gone. "I'd like to know what's wrong with me. I am disturbed. Something disturbs me all the time. I don't like to talk about it. I can't get along like that, with what's going on with me. No, I won't talk about it. I am going to tell you straight. I feel as though up there are women who are having intercourse with me. I feel highly insulted about it too. I just feel as though something was working around me all the time. I feel as though it were in my privates, something going in and out. They are doing something all the time. They go touching the chairs and as soon as I look at them they get scared. That's all. It just feels as if they were dragging away something from me all the time, like my senses were leaving my body. Sometimes I feel them pressing on my breasts. A girl was playing with her own breasts and I felt it. I feel like a toy, just like a little cheap toy. That's all. Everybody plays around with me. I think all of you are like that here. I think you play with my body too. When you pulled my chair nearer to you I felt something in my privates. The way these women act makes me hot and bothered all the time. I am like that all the time. I am going crazy from it. I am fighting all the time.

That's all. They are always following me around. I feel as though they are saying, 'she,' 'she,' all the time. When they are saying something I just feel like it is about me. I feel like a very bad girl in this place. When they brought me from Central Islip I was a terribly sick girl. That's all. I was stiff and I felt like vomiting. I didn't talk then because I just couldn't. Even now, sometimes, I can't talk. I am just like choked. It is just a heavy feeling that stops me from talking. I don't know who makes that funny feeling."

"I have been hearing voices since I am here. I hear my father. How can I talk when something stops me and I forget what I want to say. It stops me for a long time. I don't know why. Then my mind is a blank; no thoughts come there. I see faces in front of me, strange faces. They are just like staring faces. They look like almost all kinds of men. Sometimes I see powder in my food. I don't know what it is. Before I used to think all the time it was poison. I don't know who puts it in. Sometimes it goes right through my head, like a person will talk. It just comes at certain times."

The patient now exhibited quite frequent attitudes of suspicion, inquiring of the examiner why he performed various innocent motions and insisting that she could not understand what they could possibly mean.

August, 1933 to June, 1935: During this period she was generally idle, seclusive and absorbed. She hallucinated her father's voice continually but refused to divulge the trend, stating that she had forgotten. A variety of voices of "strangers" and friends alluded disgustingly to sexual matters and addressed her in derogatory terms, controlling her behavior. The voices, she was certain, spoiled parts of her body, especially her ears and her hands. The women about her, she insisted, continued to force her into sexual relations against all her opposition. Her lover's voice made indecent proposals. She experienced a continued tingling of the vulva caused, she said, by ghosts and cats who also talked to her. Because of such doings her mind was "in a fog all the time" and she could not concentrate. Laughingly, she stated that sometimes she felt like a man, as if her lover's soul had entered into her body, es-

pecially her abdomen; as if his bones were changing into her bones, all of this against her will. She insisted that the examiner was both man and woman. At times she felt herself changing into an old woman, and still again, she stated, she was made to embody many different personalities. Consequently, she felt her person to be an entirely different one, "a body without will power," and this made her so miserable that at times she wished for death. She hallucinated death-promising voices. She hated everyone, especially "God and the devil." She would like to kill everyone. The whole world was so different. She was now all alone and wanted to be left strictly alone.

July, 1935 to June, 1936: While during this year she has been doing good work in the sewing classes, she has continued to be actively hallucinated, and to be many persons; many persons having the same name are constantly being tortured (multiplication of the ego). In association there has persisted also the relaxation of the unity of the sexual functions. She has felt as though the earth was turning and she travelling at great speed, and she has seen the sun split in two, whereupon a voice placed the blame for this on her (identification with the cosmos). She has spoken also of peculiar condensed figures of doctors, and small, vague, but visible shadows and insects, all at the same time flying about her and at night crawling over her body, sucking her blood, draining off the life force, and being aided in this by mechanical devices (magic deprivation of strength). She has expressed ideas of reincarnation, (e. g., she said the same things 10,000 years ago; has been previously in the same surroundings and had the same name). Omnipotence she has manifested by promises to drive all the wicked out of Europe; she will finally avenge herself. Others, she exults, will then no longer be able to "schwindel" her (i. e., to elicit erotic emotions). The world, she insists, is soon coming to an end; the people now are rapidly dying; the voices assure her that she will die among the rest. These ideas appear to be the result of the projection of her ego tendencies and further evidence of the weakning and dissolution of the structure of her ego.

The situational or emotional psychoses, called also "purpose psychoses," though generally hysterical in nature and recoverable,

show a striking similarity of structure to cases of dementia præcox comparatively accessible to analysis. At times the symptoms closely simulate the malignant psychoses through a prolongation of course and peculiarity of features. It has been noted, not infrequently, when the symptomatology evoked by emotional shock has been quite typically that of dementia præcox, that startling and complete recoveries were achieved in secure environments, upon removal of the unbearable causative factors.

In the purpose psychoses "it can scarcely be questioned that the content of the psychosis represents conflicts and reactions to conflicts which the individual, owing to an inherited constitutional deficiency, has been incapable of handling adequately."³ And in dementia præcox too, the symptoms "are not merely scattered productions but have a definite meaning to the patient."⁴

That the situational psychoses do not always have a favorable outcome and, may actually evolve toward a dementia of the hebephreno-catatonic type is illustrated by the case presented, and there is here indicated the essential similarity between the expressions in the neuroses and in dementia præcox.

It is believed that the striking variation of reactions to stresses of the same nature is determined by varying intermixtures of constitutional and conditional forces, and that "the main contrasts or extremes are the cases with strong constitutional bias requiring but little extraneous cause, and those with at least superficially more normal make-up and a preponderance of overt more or less extraneous or circumstantial etiological factors."⁵ Further, the writer believes with Meyer that "the fixation of the disorders and of the defect is an inevitable consequence or correlate of the extent of recuperability of the psychobiological material and mechanisms."

In the case of Anna D. he believes that the chronocity of course and schizophrenic deterioration were brought about through a combination of constitutional pre-disposition (indicated by psychoses in aunts and hebephrenia in sister), the irremediable situational difficulty, and finally the "tendency to turn on definite complexes, and these especially in spheres which are difficult to reach for an adjustment."

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A CLINICAL STUDY OF THE EFFECT OF BENZEDRINE THERAPY ON SELF-ABSORBED PATIENTS

BY EUGENE DAVIDOFF, M. D.,

ASSOCIATE IN PSYCHIATRY, SYRACUSE PSYCHOPATHIC HOSPITAL

Because of the success of benzedrine as a stimulant of the higher centers of the nervous system with special reference to the narcolepsies, the question arose as to whether benzedrine would be effective in arousing self-absorbed patients from their dull state. With this in view, a purely clinical study was made on 30 of these patients.

The primary aim of the investigation was to establish whether benzedrine had any clinical value in arousing self-absorbed, uncommunicative, uncooperative patients into activity, from the standpoint of:

- (1) Increasing their motor activity.
- (2) Increasing their speech response.
- (3) Improving their affective state.
- (4) Improving their general efficiency.
- (5) Producing changes in the personality and in the structure of the psychosis.
- (6) Observing the comparative effects on the different constitutional types.

The results were contrasted with the effect of ephedrine on the same patients. Seven normal controls were also studied in order to compare the effects with the psychotic group. None of the patients knew what medication they were receiving and only one of the control cases knew the nature of the medication.

The sulphate salt of benzedrine was employed. Benzedrine is a racemic benzyl methyl carbinamine. The salt is also called B-Phenylisopropylamine sulphate. Ephedrine has an additional CH_3 or methyl radical and an additional hydroxy radical. The initial dosage of benzedrine was 10 mgs. administered in tablet form; and the initial dosage of ephedrine was 25 mgs. administered in capsules. The subjects were carefully noted for toxic or side effects. It has been stated that 10 mgs. of benzedrine is usually as effective as 25 to 30 mgs. of ephedrine.

The structure of both drugs is similar to that of adrenalin. The onset of their psychological effects, however, is not as immediate and the reactions are much more prolonged than those in the case of adrenalin. Benzedrine and ephedrine, therefore, act, first, as sympathetico-mimetic substances, which are reputed to have a stimulating effect on the sympathetic nervous system. Second, they are said to act as a stimulant to the higher centers of the nervous system. Third, certain other physiological reactions associated with their sympathetic-like action such as the effect on bowels, bladder, skin, mucous membranes, blood pressure, temperature, pulse, respiratory system, weight and general metabolism, are also ascribed to drugs. Many of these effects, however, are not well understood as yet. Because of the varying paradoxical results and the opposing effect of the cranial-sacral autonomic system, a multiplicity of reactions may be possible, depending on the constitution of the individual or the disease from which he is suffering. The study of the action of benzedrine and ephedrine on some of these functions will be reported in a subsequent communication.

Of the 30 patients chosen, 11 were catatonic præcoxes of recent onset. All were dull, self-absorbed, negativistic, shy, seclusive, inactive and passively resistive. They spoke very little and their movements showed retardation and lack of coordination. Their mood was flat and their affect rigid or inadequate.

Eleven were catatonics of more than two years standing, who showed signs of deterioration. There were 11 cataleptics and five mute cases in both catatonic groups.

Eight of these 22 cases had shown previously some phase of excitement but had remained in a self-absorbed, inactive phase for at least two months. All the cases were markedly underproductive.

The eight remaining cases were organic in origin. One was a cardiac. Two were traumatic cases, one of whom received a head trauma in an alcoholic state. Another was a case of acute hallucinosis. There were two postencephalitic cases, one of whom exhibited narcolepsy and catalepsy as well as a continued delusional state. One was a deteriorated epileptic who had not had a convulsion in six months and who was extremely dull and practically mute. The last case was an old paretic.

With respect to constitution, 18 of these patients were of the asthenic type, seven of the pyknic and five of the dysplastic. Of the normal controls, four were of the asthenic type and three were of the pyknic type. Twelve of the patients showed signs of vasomotor instability. Of the normal controls, three exhibited vasomotor signs.

METHOD OF PROCEDURE

The method of procedure was as follows:

- (1) For one week most of the cases received ephedrine (25 mgs.)
- (2) The majority received 50 mgs. of ephedrine in aqueous solution for one week more, except where toxic effects were noted.
- (3) After a period of five days in which the patients received a placebo, they were given benzedrine sulphate (10 mgs.) for one week.
- (4) They then received 20 mgs. of benzedrine for another week.
- (5) In 10 cases 10 mgs. of benzedrine and 25 mgs. of ephedrine were given together for one week.
- (6) The two postencephalitics received at the end of their treatment 15 drops of tincture of stramonium in addition to the benzedrine.
- (7) The deteriorated epileptic received 30 grains of sodium bromide, one grain and a half of luminal in addition to the benzedrine.
- (8) The seven normal controls each received 10 mgs. of benzedrine for one week, then a placebo for five days and then ephedrine 25 mgs. for one week.

RESULTS

(1). *Ephedrine*: In the two weeks period following, 23 of the patients were noted as unimproved. Four showed slight improvement. Only three were definitely improved. The seven improved cases all showed increased motor restlessness. Five showed increase in their speech processes. Three became rather irritable. The mood was least affected. Of the recent catatonic group, one showed definite improvement and two were noted as slightly improved.

Of the organic group, two showed definite improvement in all spheres and two showed slight improvement. The narcoleptic did not definitely come out of the narcoleptic and cataleptic states, but was not as drowsy or inactive as previously. None of the older catatonic patients was much affected. In the markedly underproductive cases, there was a slight improvement in automatic speech responses. Two patients showed overt toxic effects and had to be put to bed, but seven complained of severe headache. Three patients became surly and threatening. The effects did not last long. They came on within the first two or three days and disappeared after a week despite the increased dosage.

The majority of the effects were uncertain. Increased or continued dosage produced no further results except in the three cases who showed increased irritability so that the drug was discontinued prematurely. The structure of the psychosis was not affected in any case, and apparently no change was noted in the total personality reaction.

(2) *Benzdrine*: While the results would not be called altogether satisfactory, they were much more hopeful in the two weeks period in which benzedrine was employed. The effect was not as immediate as that of ephedrine but its action was more prolonged and more certain.

Of the 10 patients who received benzedrine and ephedrine together, the results were not as effective as those receiving 20 mgs. of benzedrine. Of the total of 30 patients, six were definitely improved, two showed fair improvement, five showed slight improvement and 17 were definitely unimproved.

In the more recent catatonic group, three showed definite improvement. One of these began to initiate conversation and later discussed matters freely with the physician. He became a very efficient worker and was much more active and while his mood and affect were still a trifle rigid he showed an improvement in this phase. He frequently smiled and at times indulged in humorous conversation. His case was colored by alcohol, and signs of vasomotor instability were present. Another patient presented a definite cataleptic picture. He had been mute and had seemed dazed. He became an efficient worker on the wards, answered questions and

at all times initiated conversation, but his mood remained inadequate. A third, who was dazed, inaccessible and who spoke so little as to be almost mute, began to initiate conversation, spoke rather freely, became an efficient worker on the farm but he still retained his shyness and bashfulness. However, his affect was better than when first noted. His auditory hallucinations did not bother him much. The first and third cases have been paroled.

Six of these patients were unimproved. Two cases, who were slightly improved, became markedly overtalkative, restless and antagonistic. Their affect, however, remained inadequate but the motorization, verbalization and efficiency improved. Another case noted as unimproved, did improve somewhat in his motor efficiency and was a fairly good worker but showed no change in his affect, and his verbalization improved only slightly. He continued to react to auditory hallucinations and presented a somewhat dreamy appearance.

Of the 11 old catatonics ("old," from the standpoint of their clinical course), none improved sufficiently to warrant mention and there was no effect on the structure of the psychosis. However, three of these showed increased alertness, a slight increase in verbalization, some increase in efficiency but their mood was practically unaffected. Two others were roused from their excessively dull, self-absorbed state and engaged in some form of motor activity.

In the organic group, three showed definite improvement. Two of these patients have been paroled and one is ready for parole. The best results were obtained in the two traumatic cases and in the alcoholic. In all these cases, the mood and affect were very much improved as well as the motorization and verbalization. The narcolpetic postencephalitic, with ideas of religious grandeur, was cured of his narcolepsy and catalepsy, but retained his delusions and his desire to communicate with the spirits. His affect, however, showed marked improvement and he became relatively alert. The other postencephalitic showed some improvement in his mood and in his verbalization but his motor efficiency remained poor. He also retained his delusions but at times became facetious.

Despite the fact that atropine is said to be contraindicated when benzedrine is used, the two postencephalitics were given, toward the end of the treatment, tincture of stramonium, 15 drops and benzedrine, 10 mgs., with no harmful effects. Both cases seemed indeed to do better, especially from the standpoint of motor activity and control, than when each drug was given individually.

The deteriorated epileptic received luminal and bromide along with benzedrine. He had no convulsions when the drugs were given together. On the whole, he became a trifle more alert, more active, spoke more often and his affect showed slight improvement. The parietic and cardiac showed no improvement at all. Both drugs were discontinued prematurely in these cases because of the effect on the blood pressure. A paradoxical fall in the blood pressure occurred in the cardiac.

Patients in whom vasomotor instability was prominent reacted favorably. Nine of the 12 cases showing this phenomenon improved. In all these cases, the vasomotor signs were greatly lessened.

In a similar manner those patients, seven in number, in whom there was a history of more than moderate alcoholic indulgence, also reacted favorably. Six were noted as improved.

Five of the eight patients with a previous history of catatonic excitement became overactive, impulsive, overtalkative and surly. There was a continued lack of concomitance between mood and ideation, however.

From the standpoint of habitus or constitution, none of the dysplastics showed any improvement. Two of the seven pyknics did improve. Ten of the 16 asthenics reacted favorably, and seemed to be more affected by the drug. The least change was noted in the mood.

(3). *Control Cases:* (a) With benzedrine the results were as follows:

In all cases it produced a feeling of exhilaration which lasted throughout the week. Striking changes were noted in this phase. The asthenics were affected in greater degree than the pyknics. Two of the asthenics developed a pseudohypomaniac-like reaction with marked emotionality, exhilaration and increased irritability. In

these the motor activity and psychomotor and speech functions were also greatly increased. Fatigue was lessened. Their sleep was disturbed and diminished. It increased the ability and ambition to do work but all felt "on edge, jittery, jumpy and tense." All stated subjectively that they had "a feeling of mental and physical stimulation." Two stated that while their minds were clearer at first they became more forgetful towards the end. In the pyknic types the reactions were similar but in much less degree. Restlessness continued in all the cases for about one week after withdrawal and two complained of a feeling of fatigue and depression after the drug was discontinued.

(b) With ephedrine the results were not as definite. The reaction came on more rapidly but was not as marked or prolonged. Four developed toxic effects. Three of these were asthenics; one of the asthenics developed an adrenalin-like idiosyncrasy reaction. The other three patients developed symptoms within about three days and complained mostly of weakness and fatigue.

As far as motor activity was concerned, only during the first day did this drug produce any noticeable results. In regard to the mood, the effects came on within about two hours, and lasted about three hours. But, though verbalization was only temporarily and slightly increased, motor activity was increased to a greater extent. In general, the reactions were less certain and more fleeting but they came on more quickly.

RESUME

A relatively small number of patients, namely 30, were observed and before any definite conclusions can be drawn as to the value of the drug, a larger number of cases would have to be investigated. However, this study gives some indication of the action of benzedrine on self-absorbed psychotic patients.

While it is impossible to disregard the purely psychic effect of the administration of benzedrine or the adjuvant psychotherapeutic efforts in determining its value, the following reactions were noted:

(1) In no case did benzedrine profoundly alter the structure of the psychosis, although it did accelerate a definite symptomatic

improvement in six cases of the 30. Of the 22 catatonics, only three showed noteworthy improvement from the standpoint of eligibility for parole. This may be said to differ only slightly, or not at all, from the improvement noted in the ordinary spontaneous fluctuation and remissions observed in the course of catatonic states.

(2) It did not alter the total personality reaction in any case.

(3) It increased motor activity in 15 cases. Six of the 11 cataleptics showed improvement in the sphere of muscular control.

(4) It increased speech response in 13 cases. Three of the six mute patients began to talk.

(5) It had much less effect on the mood, except in the organic cases. Only seven patients showed improvement in this phase and only three showed marked improvement.

(6) Improved general efficiency and better contact was noted in 13 cases.

(7) Asthenics, cases with vasomotor instability, alcoholics and organic cases in general, reacted more favorably and were more sensitive to the drug.

(8) Benzedrine in doses of 10-20 mgs. is relatively non-toxic except in cardiac or hypertensive cases.

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DREAM STRUCTURE AND INTELLECT

BY H. S. BARAHAL, M. D.,

ASSISTANT PHYSICIAN, KINGS PARK STATE HOSPITAL

Dreams have through the ages been clothed with a certain amount of abstruse mysticism and occultism. From the early prophetic and magical concepts so unequivocally believed and followed by the ancients, our knowledge of dream-life has evolved itself into a more logical and, shall we say, psychological consideration of the factors involved in dream-production as well as into an analytical approach which, despite its occasional philosophic flights, attempts, in as nearly a scientific manner as is possible in inferential work, to bring order out of a mythological chaos and rationality out of superstition.

Our modern concept of dreams is inseparable from, and in certain respects an inevitable result of, a more dynamic aspect of psychological reactions, whether on a conscious or unconscious level. It may, I believe, be stated with very little controversy that our present-day more animated and comprehensive study of human beings had its genesis with the views propounded by Sigmund Freud, postulating a constant interaction between painfully repressed unconscious material and conscious acts so modified that their significance is frequently veiled from the very mind in which this dramatic display takes place.

It is beyond the scope of this paper to go into an extensive discussion of Freud's views on dreams. The reader is referred to his original contribution,^{1,2} and to his more recent volume,³ in which newly-developed changes in these concepts are explained. Suffice it to say that every dream has both a *manifest* and a *latent* content, is essentially a wish-fulfillment, and undergoes a greater or lesser degree of *distortion* through *condensation*, *displacement*, *plastic representation*, and *secondary elaboration*. The more anti-social the dream-wish is, the greater must be the effort of the dreamer to distort its content. Dream distortion is really an attempt on the part of the dreamer to protect himself against painful stimuli or, to express it more categorically, it is an expression of the instinct of self-preservation.

Instincts are supposedly hereditarily predetermined reactions and are present similarly in every member of a given species.⁴ The manner, however, in which these innate drives are carried out or satisfied is dependent not on instinct but on what we have learned to term ingenuity, or intelligence. Thus, hunger is no doubt instinctual but the methods employed in obtaining food, especially in human beings, have an intellectual component. The inability to solve instinctual drives among the lower animals can have only one outcome, the rapid extermination of the individuals thus affected. In man the group has assumed the burden of caring for members lacking the capacity to meet the problems upon the solution of which their very existence depends. The mere ability to survive cannot, therefore, be considered as a criterion of intelligence.

However, one can obtain a fairly accurate impression of an individual's abilities by creating artificial situations and studying the subject's response. This has been done effectively with animals by the use of the maze and with human beings by the various intelligence tests. That the standard tests serve a useful purpose in evaluating potential and active abilities cannot be denied. But it is also true that in many instances such tests have been overrated, and through the use of arbitrary questions and questionable figures have been given the semblance of an exact science, a reputation which they do not justly deserve. Tredgold⁵ has summarized the situation quite well in the following appraisal: "Many of them (tests) favor the verbalist and handicap the child whose verbal expression is poor. The response to many of them is influenced to a considerable extent by acquirements gained in school rather than by native intelligence and very few of them can be as yet regarded as measuring various factors of mind which make for social adjustment." Wechsler⁶ also strikes a similar note in a recent contribution in which he discusses the inadequacies of standard mental tests. To these criticisms one may add the extreme difficulty encountered in differentiating primary oligophrenias from the mental "deterioration" occurring in the various psychoses, especially in schizophrenia.

Our discussion of psychometric tests may at first appear to be an unnecessary digression from our original consideration of dreams.

But let us correlate these apparently unrelated subjects. We previously concluded that distortion in dreams serves the purpose of self-preservation, and that the manner in which an individual satisfies this instinct is largely dependent on his intellectual level. The ability to construct a highly symbolic context with complicated mazes of associations properly belongs in the realm of discrimination and intelligence. The dreams of children illustrate this point quite strikingly. Children are the normal prototypes of adult mental defectives, and we take cognizance of this fact when we assign to our subjects a mental age as opposed to a chronological age. When we give a man a mental age of eight, we actually say, "This man has the mental capacity of a child of eight years." Children have not the associative capacity or background to produce a complex dream any more than has a mediocre newspaper rhymster the ability to produce a Dante's "Inferno." We can learn considerably, therefore, of mental defectives by studying the dreams of children.

Freud justly said, "The dreams of children are simple wish-fulfillments and as compared with the dreams of adults, are not at all interesting." He cites as an example the dream of his three-and-one-quarter year-old child. The little one had been quite impressed by the picturesque beauty of the Aussee and following her first crossing of the lake considered her ride entirely of too short duration and cried bitterly when taken from the boat at the landing. The following morning she said, "Last night I was sailing on the lake." Here we discern very little attempt at distortion, the content being primarily and solely a simple wish-fulfillment. Blanchard⁷ reached similar conclusions as to the simplicity of the dreams of children.

A great similarity is discovered in studying the dream productions of mental defectives. Walsh,⁸ in a study of the dreams of mentally subnormal children and adults, concludes, "The simplicity of the thought processes, the tendency to think directly, the paucity of mental associations, and the poor imaginations, will explain the childish nature of their dreams and account for the ease with which their dreams are interpreted." He cites the following dreams as quite typical of adult defectives.

"I dreamed I got a lot of boxes and they were filled with beautiful dresses, all lace and ribbons, and I was going to parties and having a wonderful time."

"I dreamed I was at my brother's and out in the barn getting eggs and found a lot of them, and went in and ate a lot of them and woke."

These two dreams are definitely at a low intellectual level and their extremely childish character is readily discernible. The following dream is at a somewhat higher level.

"I dreamed that E. C. and R. D. got into a fight in the sewing room. E. C. struck R. D. in the back. I came up and reported it to the matron." In explanation it may be said that this dream represents a wish for revenge. On the previous day, the dreamer was asked by E. C. to return certain articles she had filched from the sewing room. She resented this. R. D., another inmate, laughed at her. By getting these two into a fight she accomplishes her revenge, as fighting is forbidden and punishable by the matron. This dream attains a certain degree of complexity and displays associative propensities lacking in the first two dreams. Where in the other dreams the subject is interested chiefly in the primitive and infantile desires for simple material pleasures, the latter dreamer's productions are concerned with her emotional reactions to her surroundings, which in the dream are represented by her feelings of revenge. There is even present in this dream a definite attempt at symbolic representation, the fight being indicative of punishment. This dream is the product of a feeble-minded girl having a chronological age of 16 and a mental age of 10. Even one not versed in the study and analysis of dreams might venture a guess as to the intellectual level of the first two dreams, as compared with the last one—a mental age of six or seven would probably be a close approximation.

There is very little difference in the dream structure of psychotic and non-psychotic mental defectives except that more resistance is usually encountered in attempting to analyze the dreams of the former. The psychic drives, conflicts and repressions are handled in a similarly infantile manner.

A female patient aged 42, having a mental age of 11 years, 4 months, according to the Stanford revision of the Binet-Simon tests, dreamed that her 16-year-old boy fell off a truck and was killed. This dream occurred on Sunday night and was stimulated by the failure of her son to visit her during the day as he had promised. It apparently represents a revengeful wish-fulfillment.

This same patient dreamed at another time of her daughter getting married and leaving home with her husband. She stated that during the dream she felt very happy. In later analysis, the general trend behind both dreams was clearly revealed. The patient wished to rid herself of all outside and family responsibilities and she accomplished her purpose by having her son killed and her daughter married off. It is interesting to note the almost complete lack of camouflage in both of these dreams. The allusive subtleties, the play on words, and the artful symbolic representation which one commonly finds in the dreams of normal adults are either entirely absent or of an infantile type.

Another patient, a colored woman of 46 years who, since her hospitalization, has been too psychotic to have formal mental tests performed on her but whose past history reveals her to have been always mentally subnormal, dreamed that she found the door of the ward unlocked and she began to make a dash for home. To her dismay, however, there was a large amount of very white snow which impeded her progress and she had to return. Upon analysis, the white snow was found to represent the ward nurse (white uniform) whom she apparently considers as the only obstacle to her freedom. Her attitude toward the nurse may suggest a homoerotic attachment; else why the attempt at symbolization? However, this can only be surmised. Essentially, we have here the thwarting of a simple wish.

One patient, 56 years of age, having a mental age of nine years, who, incidentally, despite her mental enfeeblement, is quite talented musically and plays several different instruments, dreamed that the nurse gave her a loaf of bread and insisted on her eating it. This dream was influenced by an interview with the writer on the previous day during which she was advised that, if she is to go home, she must improve herself physically and eat better. The eating of

a whole loaf of bread, therefore, indirectly fulfilled her desire to leave the hospital. The following night this same patient dreamed that she was home, her folks prepared her a nice dinner and took her to a show. Here again the desire to go home is consummated. The childish character of her desires and aspirations is quite obvious. There is very little attempt at an elaborate concealment of conflicts.

Lest the reader be misled into the belief that a complete perspective of an individual's ontogeny and life-goal can be gained promptly by the mere analysis of one or two dreams we shall discuss quite briefly the motivation of dreams and the reciprocal activity existing between motivating factors and the unalterable capacity of the individual to respond to these exciting factors. The precipitating stimulus in dream causation does not concern us a great deal in this discussion. Havelock Ellis⁸ has dealt with this phase quite fully, except that he failed to stress an unconscious motivation as a force in deciding which material should receive the focus of attention in the dream drama. Whether we accept Freud's *wish-fulfillment*, Jung's *archaic unconscious*,¹⁰ Rivers' *solution of conflict*,¹¹ or a combination of these beliefs as the goal or aim of the dream, we still cannot preclude an unconscious control over the form which the dream will subsequently assume, the latter depending very little on the actual stimulus which precipitated the dream but on an inner unconscious motivation based on the dreamer's conflicts and aims. These aims or conflicts will vary considerably in the same individual, both in intensity and in their painful content, from time to time. The *censor*, as it were, acts as the jury which decides the fate of the various dream productions; some will pass through unchanged, others will be unrecognizably altered. The greater the need for concealment of painful material in any particular dream, the greater will be the complexity of the dream structure.

It is conceivable therefore that individuals of normal or even superior intelligence might occasionally produce dreams of a very simple character, with little attempt at dramatization, when handling material with an indifferent or only slightly painful content.

Yet, they display a versatility lacking in the mentally subnormal, who under no circumstances are capable of complex dreaming.

Consequently, if we are to employ dream analysis as a criterion in psychometry or in diagnosis we must be guided not by one or two dreams of any one patient but rather by a series of dreams.

It is the author's belief that this method is useful not only in classifying grades of mental enfeeblement in some cases, but also in differentiating an occasional case of "deteriorated" dementia præcox from the primary amentias.

SUMMARY

1. The theory of dream structure is discussed.
2. There is noted a striking resemblance between the dreams of young children and feeble-minded adults.
3. Also, there is noted a dissimilarity between the dreams of adults of normal intelligence and those of subnormal intelligence, the former usually being more complex.
4. From these considerations is suggested the use of dream analysis in diagnosing mental deficiency as well as differentiating actual from apparent mental enfeeblement (as in schizophrenia).

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TRENDS OF MENTAL DISEASE IN NEW YORK STATE*

BY BENJAMIN MALZBERG, PH. D.,

SENIOR STATISTICIAN, NEW YORK STATE DEPARTMENT OF MENTAL HYGIENE

Enumerations of the persons afflicted with mental disease in the United States have been taken at intervals since 1850. The results for 1850, 1860 and 1870 (obtained in connection with the general censuses of population) are generally considered seriously defective, however. The first census to which one may attach reliability is that of 1880, which showed 40,942 patients in hospitals and 51,017 outside such institutions. The latter total was obtained by circularizing physicians throughout the country. There was therefore a total of 91,959 cases enumerated in 1880, representing 183.3 per 100,000 general population. Ten years later, in 1890, those enumerated in institutions had increased to 74,028, but the total of those counted outside such hospitals was reduced to 32,457, giving a grand total of 106,485. The rate per 100,000 population decreased from 183.3 to 170.0. Succeeding enumerations were based only upon patients in hospitals for mental disease. No efforts were made to enumerate such patients outside institutions. Nevertheless, there has been a remarkable growth in the number of patients with mental disease. In 1904 there were 150,151 patients in institutions, more than twice the corresponding total in 1890. In fact, there were more patients in institutions in 1904 than were counted both within and without institutions in either of the preceding censuses. The institutional population alone provided a rate of 183.6 per 100,000 population in 1904, compared with total rates of 170.0 and 183.3 in 1890 and 1880, respectively. In 1910 and 1923 the institutional population had grown to 187,791 and 267,617, respectively, the corresponding rates being 204.2 and 245.0.¹ The latest available census data show a total of 341,485 resident patients in State hospitals only, on December 31, 1934, providing a rate of 268.6 per 100,000 general population.²

These statistics indicate what at first glance appears to be an appalling increase in mental disease. The author of the 1904 census report wrote that "from whatever point the matter is viewed the

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census returns since 1880 permit but one conclusion, namely, that the rate of increase is greater for the insane in the United States than it is for the general population."³ However, he entertained real doubts as to the significance of the data, for he felt it necessary to qualify this conclusion with the following interpretation: "The modern tendency toward a concentration of the insane in special institutions, which is becoming more and more marked, springs from a variety of conditions. As the management of the public hospitals and the care afforded patients have reached a higher standard, popular prejudice against these institutions has diminished. Yet until comparatively recent times the deep-rooted and often too-well-founded aversion to hospitals for the insane was a sufficient factor to keep out of them all patients who could be cared for in some other manner. The popular conception of a hospital for the insane as a place of confinement for the abnormal is rapidly giving way to the modern idea of a curative establishment for the sick. Wise legislation has accelerated the influx into hospitals in many places by segregating the criminal incurable, and epileptic insane and the feeble-minded from the others, by providing better safeguards in the matter of commitments, and in a few instances by prohibiting the admission of insane persons to almshouses."

In a similar way the increases shown by the later censuses have been regarded as partly spurious. Dr. H. M. Pollock, the author of the census bulletin on "Patients in Hospitals for Mental Disease, 1923," wrote that "a considerable part of the disproportionate increase of mental disease may be accounted for by the more general use of hospitals in recent years. Hospitals for the treatment of physical diseases likewise have increased in number and capacity during the same period and each year are treating more patients. Still, it is known that physical disease and the general death rate are decreasing. Maternity hospitals, also, are in greater demand than ever before but the birth rate is declining.

"In accounting for the increase of mental patients, the transformation of asylums and other custodial institutions into hospitals for the treatment of mental disease is a factor of great importance. It is now generally recognized that mental patients need expert treatment, which, as a rule, is available only in hospitals. The com-

mon observation that many patients are benefited in these institutions and return to their homes to resume their former occupations has strengthened the confidence of the people in the efficacy of the treatment afforded and has broken down much of the prejudice against institutional treatment of the insane."⁵

The general impression derived from the preceding data and their interpretation is clearly one of uncertainty. It is known that in many sections of the country provisions for the hospital treatment of patients with mental disease were formerly very inadequate. It is also a fact that there has been substantial improvement in this respect for several decades. Consequently it is clear that the increase of patients in hospitals cannot be interpreted as necessarily indicative of an increase in the true total of patients with mental disease. Neither is it possible to make any adequate statistical adjustments for such changes in policy with respect to provisions for their care. It is impossible to estimate what percentage of the increase should be allocated to the results of building operations and changes in hospital capacity, and what percentage should be attributed to a genuine increase in the number of new cases. For these reasons data derived from a heterogeneous source, such as the several states, cannot be safely used in determining reliable trends in the growth of mental disease.

What is true of the nation at large, applies in equal degree to those states in which policies with respect to provision for the hospital treatment of patients with mental disease have changed over long intervals. Obviously in states where this is true, the rates of mental disease derived from institutional populations are at best only approximations to the true incidence; and in addition the degree of approximation cannot be gauged accurately from year to year.

Fortunately this criticism does not apply with equal rigor to New York State. We have a long history of state provision for the insane. Beginning with the creation of the Utica State Hospital almost a century ago, there has been a sustained effort to make hospital treatment available to all patients with mental disease throughout the State. Culminating in the State Care Act of 1890, we possess, since that year, standardized data with respect to the

number of patients with mental disease under treatment in New York State. In the succeeding sections we shall see what light these data throw on the problems of trends of mental disease in New York State.

NUMBER OF PATIENTS IN INSTITUTIONS

Table 1 shows the number of patients on the books of all institutions for the insane in New York State from 1889 to 1935, and the number per 100,000 general population. The table also shows the number of patients on the books of the civil State hospitals from 1889 to 1935.

TABLE 1. NUMBER OF PATIENTS IN INSTITUTIONS FOR THE INSANE IN NEW YORK STATE, AND RATIO OF PATIENTS TO POPULATION, 1889-1935

Year*	Number of Patients						Number of patients in all institutions per 100,000 population		
	All institutions			Civil State hospitals†			Males	Females	Total
	Males	Females	Total	Males	Females	Total			
1889	7,216	8,257	15,473	6,687	7,718	14,405	244.8	275.8	260.4
1890	7,509	8,497	16,006	6,961	7,991	14,952	250.2	279.1	264.8
1891	7,858	8,794	16,652	7,287	8,276	15,563	256.4	283.0	269.8
1892	8,246	9,155	17,401	7,562	8,609	16,171	263.6	288.7	276.3
1893	8,749	9,602	18,351	7,984	9,030	17,014	274.2	296.9	285.6
1894	9,172	9,916	19,088	8,424	9,392	17,816	281.8	300.8	291.3
1895	9,722	10,494	20,216	8,894	9,961	18,855	293.0	312.3	302.7
1896	10,020	10,849	20,869	9,164	10,314	19,478	296.3	316.9	306.7
1897	10,484	11,199	21,683	9,571	10,640	20,211	304.3	321.3	312.8
1898	10,854	11,532	22,386	9,886	10,959	20,845	309.3	324.9	317.2
1899	11,169	11,854	23,023	10,121	11,253	21,374	312.6	328.2	320.5
1900	11,493	12,285	23,778	10,422	11,666	22,088	315.6	333.8	324.7
1901	11,804	12,510	24,314	10,755	11,899	22,654	317.3	332.6	325.0
1902	12,079	12,911	24,990	10,986	12,283	23,269	317.9	336.1	327.0
1903	12,542	13,392	25,934	11,445	12,742	24,187	323.3	341.5	332.4
1904	12,930	13,931	26,861	11,789	13,230	25,019	326.6	348.1	337.4
1905	13,175	14,231	27,406	11,994	13,524	25,518	325.2	348.1	336.7
1906	13,548	14,754	28,302	12,331	14,026	26,357	325.0	352.5	338.8
1907	13,927	15,166	29,093	12,680	14,422	27,102	324.9	354.2	339.6
1908	14,638	15,819	30,457	13,313	15,035	28,348	332.4	361.2	346.8

TABLE 1. NUMBER OF PATIENTS IN INSTITUTIONS FOR THE INSANE IN NEW YORK STATE, AND RATIO OF PATIENTS TO POPULATION, 1889-1935—(Concluded)

Year*	Number of patients						Number of patients in all institutions per 100,000 population		
	All institutions			Civil State hospitals†			Males	Females	Total
	Males	Females	Total	Males	Females	Total			
1909	15,107	16,433	31,540	13,734	15,629	29,363	334.2	367.1	350.5
1910	15,654	17,004	32,658	14,252	16,193	30,445	339.6	373.2	356.3
1911	16,010	17,301	33,311	14,569	16,482	31,051	343.4	374.9	359.1
1912	16,271	17,702	33,973	14,744	16,880	31,624	345.1	378.7	361.8
1913	16,716	18,317	35,033	15,089	17,510	32,599	350.6	387.0	368.7
1914	16,899	18,825	35,724	15,318	18,039	33,357	350.5	392.9	371.6
1915	17,382	19,281	36,663	15,796	18,512	34,308	356.1	396.9	376.5
1916	17,863	19,718	37,581	16,252	18,961	35,213	362.0	401.0	381.4
1917	18,422	20,342	38,764	16,801	19,556	36,357	367.9	407.0	387.5
1918	18,809	20,888	39,697	17,219	20,133	37,352	370.3	411.4	390.8
1919	19,016	20,929	39,945	17,407	20,200	37,607	369.2	405.8	387.5
1920	19,515	21,265	40,780	17,752	20,542	38,294	373.7	406.2	390.0
1921	20,182	21,922	42,104	18,543	21,193	39,736	381.5	412.9	397.2
1922	20,921	22,310	43,231	19,271	21,620	40,891	390.3	414.4	402.4
1923	21,323	22,618	43,941	19,394	21,908	41,302	392.8	414.4	403.6
1924	21,961	23,106	45,067	19,845	22,407	42,252	399.5	417.6	408.6
1925	22,667	23,858	46,525	20,444	23,157	43,601	403.2	423.9	413.6
1926	23,385	24,129	47,514	21,002	23,417	44,419	405.0	418.1	411.6
1927	24,702	24,966	49,668	22,096	24,214	46,310	416.8	422.2	419.5
1928	26,180	26,157	52,337	23,134	25,398	48,532	430.6	431.9	431.3
1929	27,630	26,961	54,591	24,007	26,149	50,156	443.4	435.0	439.2
1930	28,718	27,778	56,496	25,045	26,985	52,030	449.8	438.1	444.0
1931	29,643	28,640	58,283	26,041	27,873	53,914	453.5	441.8	447.6
1932	31,124	29,833	60,957	27,677	29,127	56,804	465.3	450.3	457.8
1933	33,069	31,148	64,217	29,295	30,453	59,748	483.3	460.2	471.8
1934	34,931	32,515	67,446	30,939	31,840	62,779	499.4	470.5	485.0
1935	36,131	33,941	70,072	32,052	33,265	65,317	505.6	481.2	493.4

*September 30 of each year from 1889 to 1915; June 30, thereafter.

†Inclusive of those in county almshouses prior to 1894 and in county asylums prior to 1896.

The population on the books of all institutions grew steadily, increasing from 15,473 in 1889 to 70,072 in 1935. The growth has not been in equal annual increments; that is, the growth has been accelerated in recent years. Males and females show similar upward

trends, the former growing from 7,216 in 1889 to 36,131 in 1935; females grew from 8,257 to 33,941. It should be noted that the female book population exceeded that of the males through 1927. Since 1928 males have been in excess.

It is of special interest to examine the growth in the civil State hospitals. From an examination of Table 1, it appears obvious that the population has been growing steadily. For many reasons, it is important to see what the trend indicates as the future population in these hospitals. Taking the whole experience from 1889 to 1935, the growth in population may be expressed by the equation:

$$Y=30,942.6+971.8x+14.1x^2$$

(x , the year, is measured from 1912 as origin.) According to this equation, the book population of the civil State hospitals in 1945 will be 78,367. However, the equation is not the best possible, for it gives a smaller population in 1935 than is actually found on the books. In other words, the acceleration in annual growth is not properly indicated by the law. Using the experience of 1925-1935 only, with 1930 as year of origin, we obtain an equation which provides an excellent representation of the data. This equation is:

$$Y=52,100.3+2,205.8x+95.5x^2$$

from which we obtain a forecast of a population of 106,675 in 1945. This will probably be nearer the truth than the first prediction, and under present conditions, will apparently not be an underestimate. The future total may be influenced, however, by two administrative policies, namely, parole and family care. At present, paroles represent approximately 8 per cent of the book population. If this remains constant, the resident population in 1945 will be about 8,000 less than the book population. It is not possible at present to estimate the potentialities of family care.

It is also of interest to see how the book population of the civil State hospitals is distributed with respect to residence. Such data are available since 1909, and Table 2 shows the number of patients on the books of these institutions, distributed between New York City and the remainder of the State. These are illustrated in Graph 1.

**GRAPH I - PATIENTS ON BOOKS OF NEW YORK CIVIL STATE HOSPITALS
FROM NEW YORK CITY AND FROM THE REST OF THE STATE, 1909-1935**

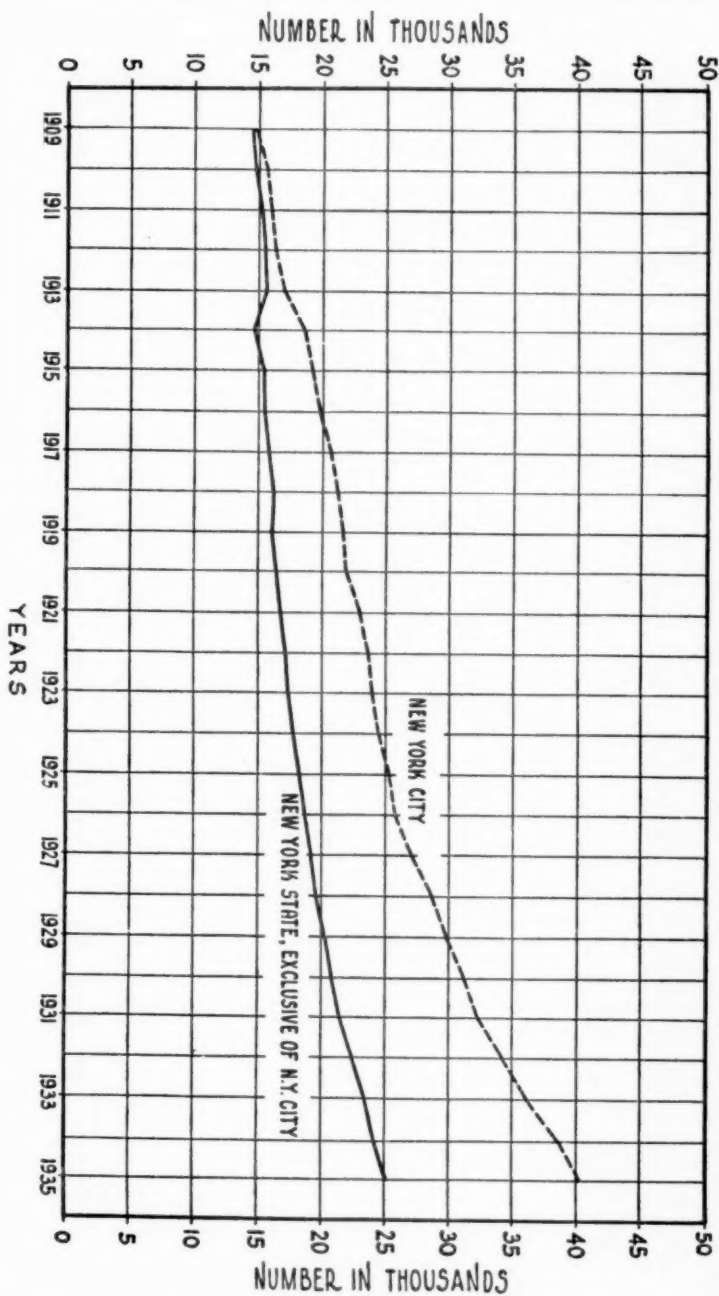


TABLE 2. NUMBER OF PATIENTS IN THE NEW YORK CIVIL STATE HOSPITALS, ADMITTED FROM NEW YORK CITY, AND THE REMAINDER OF THE STATE, AND RATIO OF PATIENTS TO POPULATION, 1909 TO 1935

Year*	Number		Number per 100,000 general population	
	New York City	Remainder of New York State	New York City	Remainder of New York State
1909	14,697	14,666	319.1	342.3
1910	15,523	14,922	326.1	343.5
1911	15,855	15,196	329.0	345.2
1912	16,129	15,495	330.9	347.5
1913	16,991	15,608	344.7	345.6
1914	18,436	14,921	369.9	326.2
1915	19,055	15,253	378.2	329.4
1916	19,798	15,415	386.7	331.0
1917	20,588	15,769	392.5	336.7
1918	21,178	16,174	394.4	343.3
1919	21,576	16,031	392.6	338.4
1920	21,900	16,394	389.7	344.0
1921	22,938	16,798	404.8	345.5
1922	23,674	17,217	414.3	347.2
1923	23,915	17,387	415.2	343.9
1924	24,461	17,791	421.2	345.3
1925	25,278	18,323	431.8	349.1
1926	25,747	18,672	429.0	350.1
1927	27,131	19,179	436.2	354.6
1928	28,789	19,743	447.1	359.9
1929	29,969	20,187	450.2	362.9
1930	31,226	20,804	454.1	369.0
1931	32,442	21,472	457.3	375.7
1932	34,308	22,496	469.1	388.5
1933	36,257	23,491	481.4	400.4
1934	38,612	24,167	498.2	406.6
1935	40,277	25,040	505.4	415.9

*September 30 from 1909 to 1915; June 30, thereafter.

Patients from New York City exceeded those from the remainder of the State in every year since 1909, the disparity increasing from year to year. Those from New York City grew from a total of 14,697 in 1909 to 40,277 in 1935. The growth may be represented by the equation:

$$Y=23,225.1+888.7x+24.2x^2$$

The origin is taken at 1922. The equation gives a predicted book population for New York City of 56,467 in 1945. This is undoubtedly too low, however, inasmuch as the recorded book population in 1935 exceeds the trend value for that year. A better prediction curve is obtained, therefore, by using the interval 1925-1935, with 1930 as origin, which gives:

$$Y=31,197.4+1,521.3x+62.4x^2$$

This equation provides an excellent fit to the data and indicates a population of 68,057 in 1945.

The population of the remainder of the State on the books of the civil State hospitals increased from 14,666 in 1909 to 25,040 in 1935. Reasoning as above, we obtain a trend equation of

$$Y=17,038.7+369.2x+17.4x^2$$

for 1909-1935, and

$$Y=30,903.0+684.5x+33.1x^2$$

for 1925-1935. The latter provides a better fit, and from it we may obtain a prediction of 38,618 for 1945.

NUMBER OF PATIENTS PER 100,000 GENERAL POPULATION

Table 1 also includes rates of patients on the books of all institutions for insane in New York State, per 100,000 general population from 1889 to 1935. These are illustrated in Graph 2. With but a few minor exceptions there has been a steady upward trend, which is well described by a straight line from 1889 to 1918; i. e.,

$$Y=4.1x+332.8$$

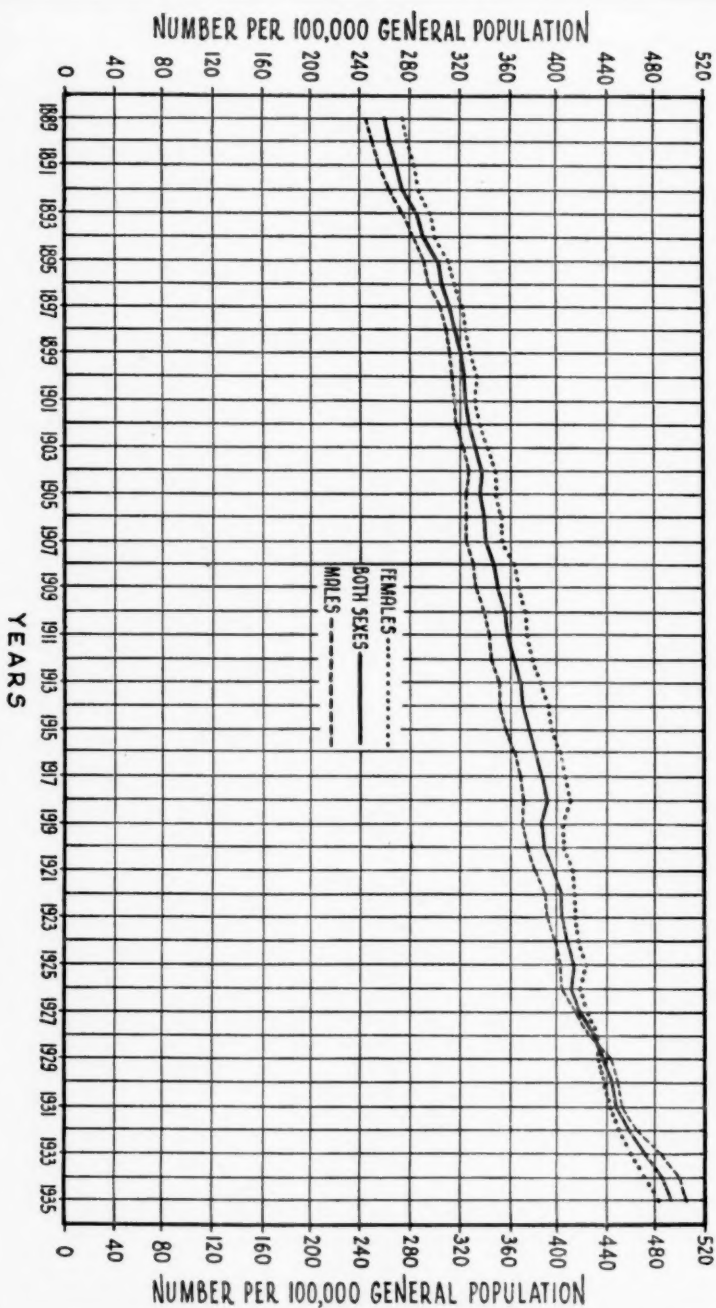
where Y represents the annual rate, and x, the year, is measured from 1904 as origin. This indicates an annual increase in the rate of 4.1 per 100,000 population. The annual growth was accelerated after 1918, and the trend is very well described by the following equation:

$$Y=422.5+6.3x+0.3x^2$$

(1927 as year of origin).

Among males the annual rate increased between 1889 and 1904, but with a decreasing acceleration. From 1904 to 1907 there was, in fact, a slight downward trend. Since 1907 the rates have grown steadily, and the trend may be well described by the equation:

**GRAPH 2.-PATIENTS ON BOOKS OF ALL INSTITUTIONS FOR MENTAL DISEASE
IN NEW YORK STATE, PER 100,000 POPULATION, 1889-1935**



$$Y=391.9+6.0x+0.2x^2$$

which shows that since 1907 the rates have been growing with an accelerated velocity.

Among females the rates may be well described by a straight line from 1889 to 1918 (1904 as origin) which means that the rate of increase was uniform from year to year. The trend equation is

$$Y=4.6x+346.5$$

From 1918 to 1935, however, there has been an accelerated growth in the rate, represented by the equation:

$$Y=423.6+3.7x+0.2x^2$$

(1927 as origin).

We may note that the female rate was well in excess of that of the males from 1889 to 1928. Since the latter year the male rate has been in excess, and it is growing more rapidly than that of the females.

Table 2 shows the number of patients from New York City and the remainder of the State on the books of the civil State hospitals, per 100,000 corresponding general population. The data are available beginning with 1909 and are illustrated in Graph 3. In the latter year the rate for New York State, exclusive of New York City, exceeded that of New York City, and it remained in excess until 1913. Thereafter the rate for New York City has been well in excess. The trend for New York City is very closely linear from 1914 to 1927. Since 1928 there has been a rapid acceleration in the rate.

The rate for the remainder of the State increased slightly between 1909 and 1913, then dropped to a minimum in 1914. Thereafter the rate rose steadily, as in the case of New York City. The growth has been especially marked since 1927.

From the statistics of numbers and rates of patients in residence in the several hospitals for mental disease in New York, we now turn to a consideration of annual admissions. It is generally held that the best measure of the prevalence of mental disease is afforded by statistics of first admissions. Table 3 summarizes the number of first admissions to all hospitals for mental disease per 100,000 general population, and the rates are illustrated in Graph 4.

**GRAPH 3 - PATIENTS ON BOOKS OF NEW YORK CIVIL STATE HOSPITALS FROM N.Y. CITY
AND FROM THE REST OF THE STATE, PER 100,000 POPULATION, 1909-1935**

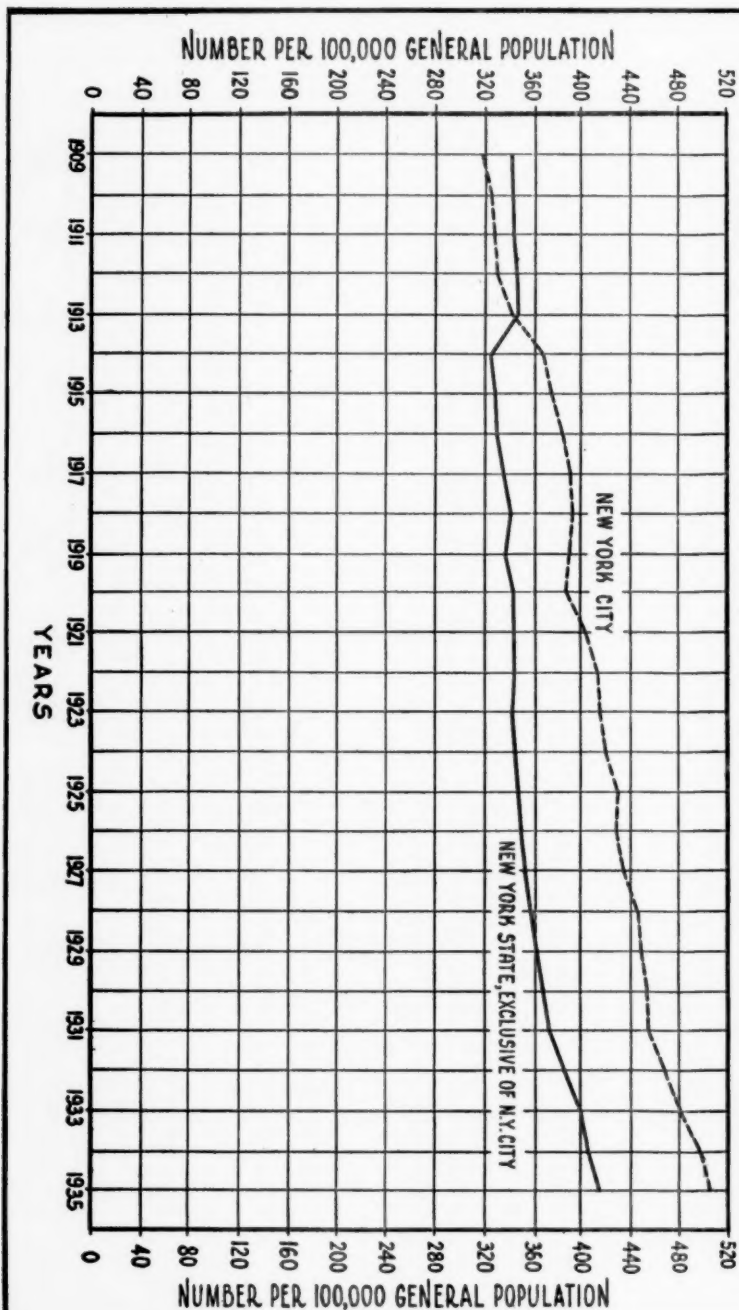


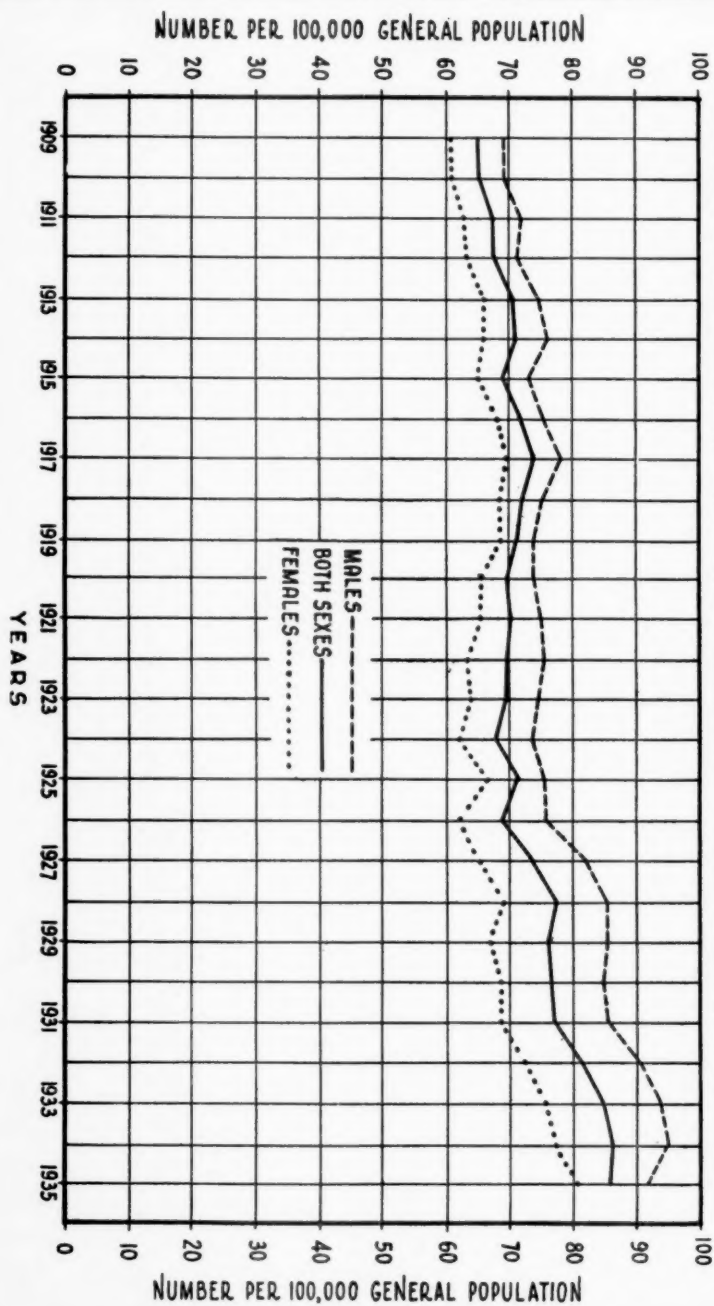
TABLE 3. NUMBER OF FIRST ADMISSIONS TO ALL INSTITUTIONS FOR MENTAL DISEASE IN NEW YORK STATE, 1909 TO 1935

Year	Males	Number		Total	Number per 100,000 general population		
		Females			Males	Females	Total
1909	3,096	2,688		5,784	69.4	60.7	65.1
1910	3,183	2,761		5,944	69.5	61.0	65.3
1911	3,334	2,894		6,228	71.9	63.1	67.5
1912	3,356	2,944		6,300	71.6	63.4	67.5
1913	3,545	3,105		6,650	74.8	66.0	70.4
1914	3,642	3,147		6,789	76.0	66.1	71.0
1915	3,545	3,145		6,690	73.1	65.2	69.2
1916*	2,776	2,493		5,269	75.5	68.1	71.9
1917	3,878	3,462		7,340	78.0	69.8	73.9
1918	3,789	3,455		7,244	75.1	68.6	71.9
1919	3,782	3,495		7,277	73.9	68.3	71.1
1920	3,833	3,412		7,245	73.9	65.6	69.8
1921	3,936	3,449		7,385	74.9	65.4	70.1
1922	4,021	3,397		7,418	75.5	63.5	69.5
1923	4,029	3,466		7,495	74.7	63.9	69.3
1924	4,030	3,405		7,435	73.8	62.0	67.8
1925	4,187	3,716		7,903	75.7	66.7	71.2
1926	4,294	3,508		7,802	75.8	61.9	68.8
1927	4,765	3,789		8,554	81.9	65.2	73.6
1928	5,109	4,111		9,220	85.6	69.0	77.3
1929	5,220	4,071		9,291	85.3	66.8	76.0
1930	5,311	4,270		9,581	84.6	68.4	76.6
1931	5,483	4,365		9,848	85.3	68.4	76.9
1932	5,929	4,712		10,641	90.1	72.2	81.2
1933	6,315	5,039		11,354	93.8	75.6	84.7
1934	6,520	5,251		11,771	94.7	77.1	86.0
1935	6,431	5,572		12,003	91.4	80.1	85.8

*Admissions are for 9 months due to change in fiscal year, rates estimated for year.

There was a generally rising trend from 1909 to 1917, the rate increasing from 65.1 to 73.9. This was followed by a downward trend, culminating in a rate of 67.8 in 1924. The decrease was due, in part, to the declining rate of alcoholic psychoses in this interval. Since 1924 there has been a rapid increase in the rate of first admissions. This is associated with an increase in alcoholic psychoses

**GRAPH 4--FIRST ADMISSIONS TO ALL INSTITUTIONS FOR MENTAL DISEASE
IN NEW YORK STATE, PER 100,000 GENERAL POPULATION, 1909-1935**



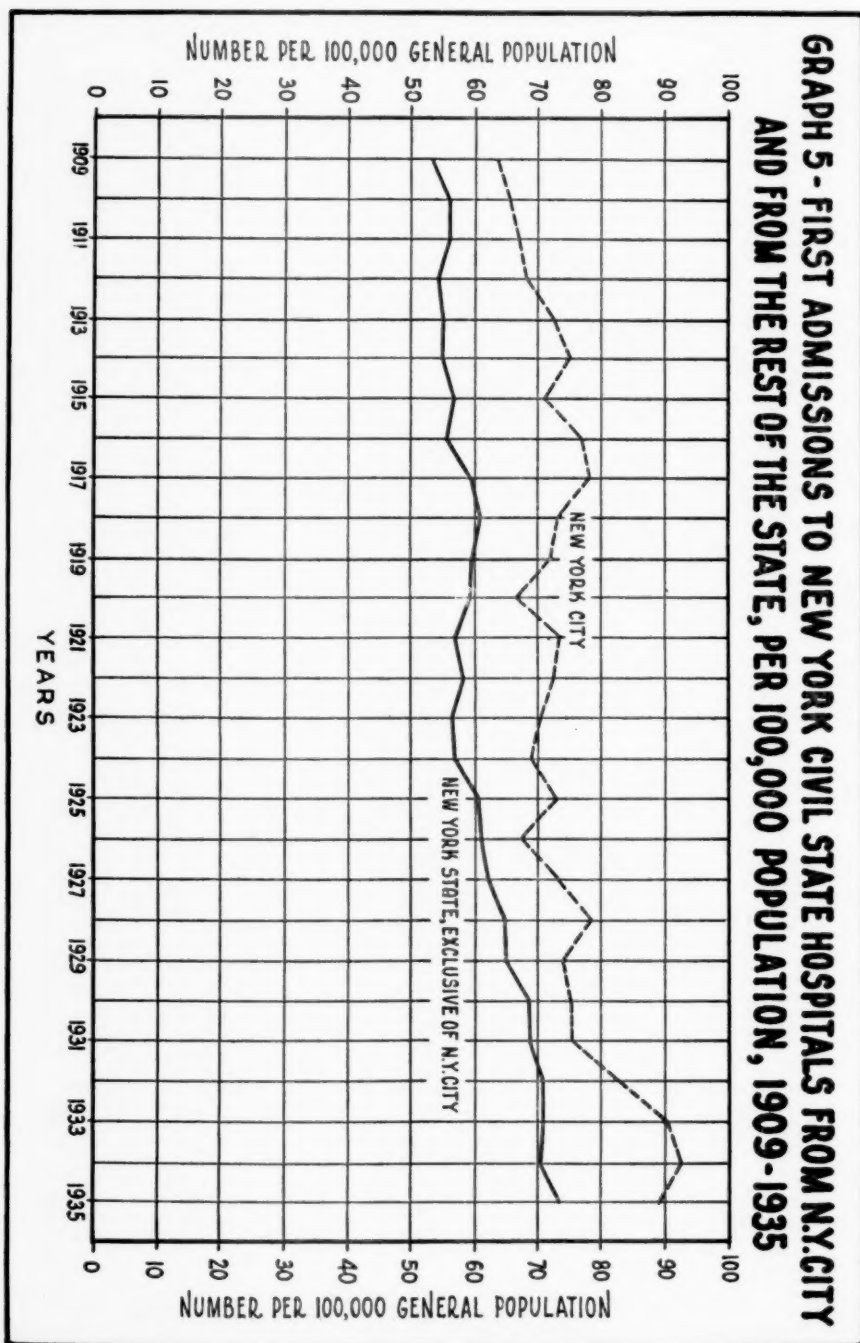
and in psychoses with cerebral arteriosclerosis. It may be noted that the male rate greatly exceeds that of the females.

We may also compare rates of first admissions for New York City with those for the remainder of the State. Such data are available with respect to first admissions to the civil State hospitals from 1909 to 1935. The data are shown in Table 4, and Graph 5.

TABLE 4. NUMBER OF FIRST ADMISSIONS TO THE NEW YORK CIVIL STATE HOSPITALS, FROM NEW YORK CITY, AND THE REMAINDER OF THE STATE, AND RATIO OF FIRST ADMISSIONS TO POPULATION, 1909 TO 1935

Year	Number		Number per 100,000 general population	
	New York City	Remainder of New York State	New York City	Remainder of New York State
1909	2,940	2,282	63.8	53.3
1910	3,123	2,441	65.6	56.2
1911	3,226	2,474	66.9	56.2
1912	3,317	2,425	68.1	54.4
1913	3,577	2,484	72.6	55.0
1914	3,751	2,514	75.3	55.0
1915	3,587	2,617	71.2	56.5
1916*	3,953	2,584	77.2	55.5
1917	4,084	2,793	77.9	59.6
1918	3,932	2,865	73.2	60.8
1919	3,951	2,840	71.9	59.9
1920	3,739	2,834	66.5	59.5
1921	4,174	2,765	73.7	56.9
1922	4,128	2,887	72.2	58.2
1923	4,046	2,854	70.2	56.5
1924	3,996	2,937	68.8	57.0
1925	4,272	3,163	73.0	60.3
1926	4,048	3,247	67.5	60.9
1927	4,567	3,361	73.4	62.1
1928	5,051	3,563	78.5	64.9
1929	4,928	3,622	74.0	65.1
1930	5,179	3,861	75.3	68.5
1931	5,360	3,926	75.6	68.7
1932	6,041	4,101	82.6	70.8
1933	6,788	4,147	90.1	70.7
1934	7,184	4,165	92.7	70.1
1935	7,135	4,419	89.5	73.4

*Admissions are for 9 months due to change in fiscal year, rates estimated for year.



The rates for New York City show many irregular fluctuations. In general, however, there was a rising trend from 1909 to 1917, a decrease between 1917 and 1927, and a rising trend thereafter. The rates for New York City are well in excess of those of the remainder of the State. The latter showed a slowly rising trend from 1909 to 1918, a slow decrease between 1918 and 1923, and a rapid rise thereafter.

Contrasts may also be shown between the rates of first admissions of the urban and rural populations of New York State. Records of such first admissions to the civil State hospitals are available from 1916 to 1935, and are shown in Table 5 and Graph 6.

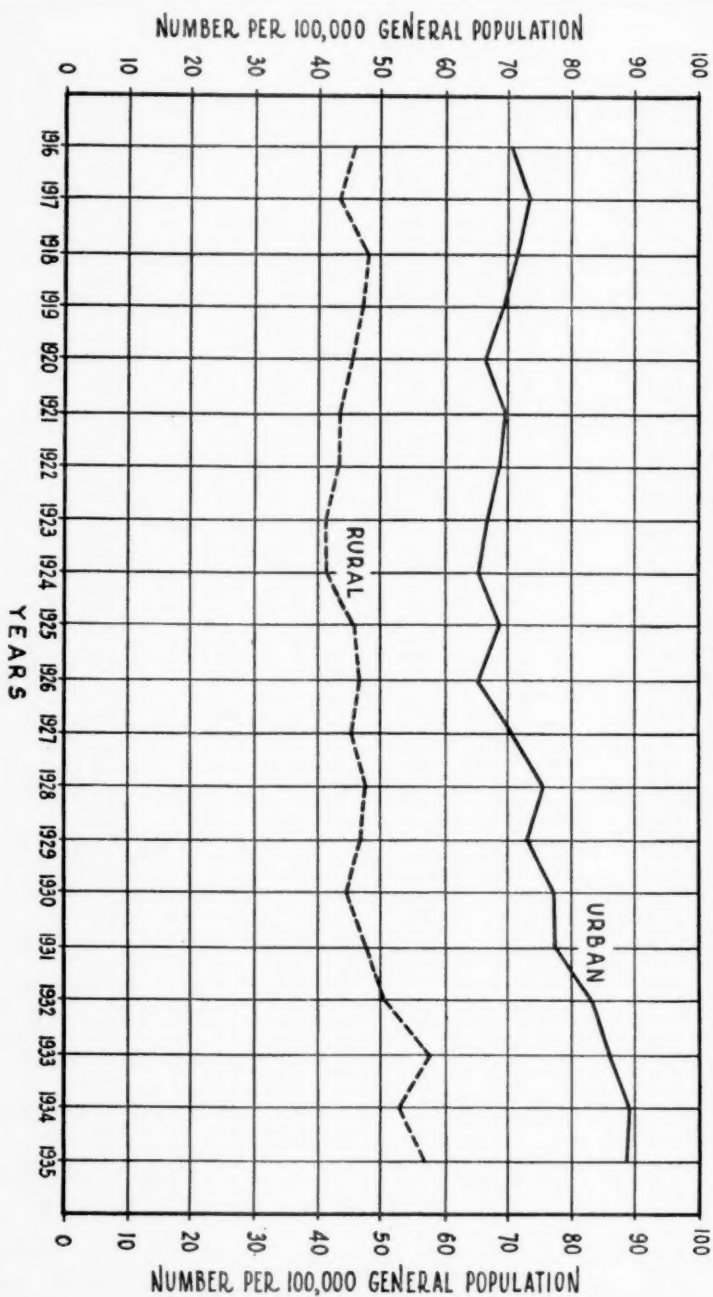
TABLE 5. NUMBER OF FIRST ADMISSIONS TO THE NEW YORK CIVIL STATE HOSPITALS FROM RURAL AND URBAN AREAS OF NEW YORK STATE, AND RATIO OF FIRST ADMISSIONS TO POPULATION, 1916 TO 1935

Year	Number		Number per 100,000 general population	
	Rural	Urban	Rural	Urban
1916*	634	4,256	45.7	70.5
1917	795	6,007	43.3	73.7
1918	876	5,906	48.1	71.2
1919	852	5,898	47.1	69.8
1920	823	5,715	45.8	66.5
1921	791	6,137	43.4	69.9
1922	803	6,177	43.4	68.9
1923	768	6,117	41.0	66.8
1924	781	6,136	41.1	65.7
1925	882	6,543	45.8	68.6
1926	913	6,364	46.7	65.5
1927	898	6,997	45.3	70.6
1928	958	7,634	47.7	75.6
1929	949	7,575	46.7	73.6
1930	917	8,094	44.5	77.3
1931	993	8,274	47.6	77.6
1932	1,064	9,061	50.4	83.5
1933	1,236	9,511	57.8	86.1
1934	1,139	10,028	52.6	89.3
1935	1,243	10,113	56.7	88.6

*Admissions are for 9 months due to change in fiscal year, rates estimated for year.

The urban rates were considerably in excess of those of the rural population. Among the former the rate rose from 70.5 in 1916 to 73.7 in 1917 and then decreased steadily to 66.5 in 1920. After a short rise through 1921, the rate again decreased for several years. Beginning with 1927 there has been a sharp upward trend.

GRAPH 6 - FIRST ADMISSIONS TO NEW YORK CIVIL STATE HOSPITALS FROM URBAN AND RURAL DISTRICTS, PER 100,000 POPULATION, 1916-1935



Among the rural population the rate decreased steadily from 48.1 in 1918 to 41.0 in 1923. The rate then rose slowly to 47.7 in 1928. Following a short decline between 1928 and 1930, the rate has since shown a marked upward trend.

In the following sections we shall describe trends of first admissions for the more important groups of psychoses. Such data are available with respect to the civil State hospitals. Since these hospitals include over 90 per cent of the annual first admissions to all institutions for mental disease in New York State, the trends are entirely representative.

SENILE PSYCHOSES

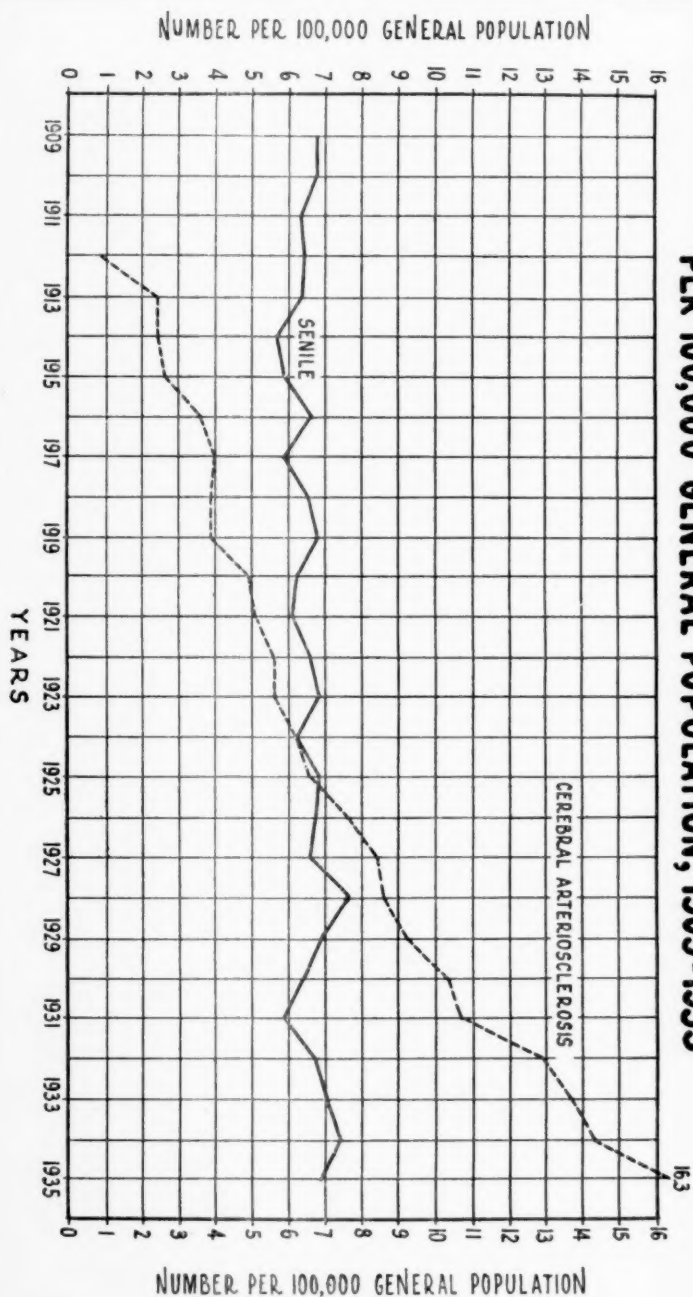
Table 6 shows first admissions with senile psychoses. The rates are illustrated in Graph 7.

TABLE 6. FIRST ADMISSIONS WITH SENILE PSYCHOSES, 1909-1935

Year	Males	Number Females	Total	Number per 100,000 general population		
				Males	Females	Total
1909	279	327	606	6.3	7.4	6.8
1910	297	318	615	6.5	7.0	6.8
1911	258	325	583	5.6	7.1	6.3
1912	285	311	596	6.1	6.7	6.4
1913	269	325	594	5.7	6.9	6.3
1914	247	295	542	5.2	6.2	5.7
1915	247	323	570	5.1	6.7	5.9
1916*	204	282	486	5.6	7.7	6.6
1917	235	350	585	4.7	7.1	5.9
1918	281	371	652	5.6	7.4	6.5
1919	324	375	699	6.3	7.3	6.8
1920	231	415	646	4.5	8.0	6.2
1921	244	393	637	4.6	7.5	6.1
1922	261	435	696	4.9	8.1	6.5
1923	285	452	737	5.3	8.3	6.8
1924	256	421	677	4.7	7.7	6.2
1925	313	443	756	5.7	8.0	6.8
1926	336	420	756	5.9	7.4	6.7
1927	334	439	773	5.7	7.6	6.6
1928	389	513	902	6.5	8.6	7.6
1929	372	470	842	6.1	7.7	6.9
1930	302	494	796	4.8	7.9	6.4
1931	317	435	752	4.9	6.8	5.9
1932	366	517	883	5.6	7.9	6.7
1933	393	550	943	5.8	8.2	7.0
1934	409	607	1,016	5.9	8.9	7.4
1935	351	620	971	5.0	8.9	6.9

*Includes 9 months due to change in fiscal year; rates estimated for 12 months.

GRAPH 7 - FIRST ADMISSIONS WITH SENILE PSYCHOSES AND PSYCHOSES WITH CEREBRAL ARTERIOSCLEROSIS TO NEW YORK CIVIL STATE HOSPITALS, PER 100,000 GENERAL POPULATION, 1909-1935



The rates fluctuate greatly, but there is, nevertheless, an upward trend. This is represented by the equation:

$$Y=0.02x+6.5$$

(1922 as origin), which means that on the average the rate has increased 0.02 per 100,000 population from year to year. Since 1914, the rate of increase has been greater, and if we fit a curve for 1914-1935, we find an average annual increase in the rate of 0.04 per 100,000 population. However, we cannot be certain that the trend is statistically significant.

The female rate is constantly in excess of that of the males.

PSYCHOSES WITH CEREBRAL ARTERIOSCLEROSIS

Rates of first admissions with psychoses with cerebral arteriosclerosis are shown in Table 7 and Graph 7.

TABLE 7. FIRST ADMISSIONS WITH PSYCHOSES WITH CEREBRAL ARTERIOSCLEROSIS, 1912-1935

Year	Males	Number Females	Total	Number per 100,000 general population		
				Males	Females	Total
1912	89	77	166	1.9	1.7	1.8
1913	121	102	223	2.6	2.2	2.4
1914	134	94	228	2.8	2.0	2.4
1915	159	91	250	3.3	1.9	2.6
1916*	182	81	263	5.0	2.2	3.6
1917	251	144	395	5.0	2.9	4.0
1918	203	190	393	4.0	3.8	3.9
1919	236	164	400	4.6	3.2	3.9
1920	299	214	513	5.8	4.1	4.9
1921	327	215	542	6.2	4.1	5.1
1922	358	241	599	6.7	4.5	5.6
1923	375	230	605	7.0	4.2	5.6
1924	386	289	675	7.1	5.3	6.2
1925	407	330	737	7.4	5.9	6.6
1926	494	372	866	8.7	6.6	7.6
1927	576	402	978	9.9	6.9	8.4
1928	597	423	1,020	10.0	7.1	8.6
1929	637	493	1,130	10.4	8.1	9.2
1930	746	544	1,290	11.9	8.7	10.3
1931	781	595	1,376	12.2	9.3	10.7
1932	964	720	1,684	14.7	11.0	12.9
1933	1,065	769	1,834	15.8	11.5	13.7
1934	1,086	877	1,963	15.8	12.9	14.3
1935	1,222	1,059	2,281	17.4	15.2	16.3

*Includes 9 months due to change in fiscal year; rates estimated for 12 months.

There has been a remarkable growth since 1912. The growth has not been uniform, however, from year to year; that is, there is an accelerated growth. This is shown by the following trend equation, which gives an excellent fit:

$$Y=5.3+0.5x+0.02x^2$$

(1924 as origin). It cannot be maintained that the growth is due to changes in differential diagnoses, since the senile psychoses have not shown a corresponding decline.

The increase in psychoses with cerebral arteriosclerosis must be accepted as real. We know that arteriosclerosis has increased in the general population. Furthermore, the increase is not due solely to an age shift in the general population. In comparable age groups there has been a steady increase in psychoses associated with cerebral arteriosclerosis.

TABLE 8. FIRST ADMISSIONS WITH GENERAL PARESIS, 1911-1935

Year	Males	Number Females	Total	Number per 100,000 general population		
				Males	Females	Total
1911	558	200	758	12.0	4.4	8.2
1912	551	168	719	11.8	3.6	7.7
1913	585	183	768	12.3	3.9	8.1
1914	627	147	774	13.1	3.1	8.1
1915	684	130	814	14.1	2.7	8.4
1916*	494	146	640	13.4	4.0	8.7
1917	681	185	866	13.7	3.7	8.7
1918	725	188	913	14.4	3.7	9.1
1919	710	170	880	13.9	3.3	8.6
1920	679	141	820	13.1	2.7	7.9
1921	670	157	827	12.7	3.0	7.9
1922	669	171	840	12.6	3.2	7.9
1923	671	142	813	12.4	2.6	7.5
1924	664	158	822	12.2	2.9	7.5
1925	647	164	811	11.7	2.9	7.3
1926	658	153	811	11.7	2.7	7.2
1927	652	170	822	11.3	2.9	7.1
1928	734	192	926	12.4	3.2	7.8
1929	688	172	860	11.3	2.8	7.0
1930	740	192	932	11.9	3.1	7.4
1931	713	214	927	11.1	3.4	7.2
1932	741	181	922	11.3	2.8	7.0
1933	791	228	1,019	11.8	3.4	7.6
1934	722	211	933	10.5	3.1	6.8
1935	783	198	981	11.1	2.8	7.0

*Includes 9 months due to change in fiscal year; rates estimated for 12 months.

GENERAL PARESIS

Rates of first admissions with general paresis are shown in Table 8 and Graph 8.

The results for general paresis are remarkable, inasmuch as they represent the only well-established and continued decrease in rates of first admissions. Since 1911, the rate has decreased annually by 0.06 per 100,000 population. The rate of decrease has been even greater since 1918. Since the latter year there has been an annual decrease of 0.09 per 100,000 population.*

The declining trend may be associated with a general decrease in the incidence of syphilis. Statistics recently compiled by the New York State Department of Health indicate that there probably has been such a decrease in the past two decades. The result may, on the other hand, be due to less tertiary syphilis. The decline in general paresis began in 1918, and this may be related to the vast educational campaign carried on by official authorities during the war. It is possible that there has since been a more general use of prophylactics.

ALCOHOLIC PSYCHOSES

Rates of first admissions with alcoholic psychoses are shown in Table 9 and are illustrated in Graph 9.

From 1909 to 1920 the rate decreased 0.4 per 100,000 population, annually. The trend during this period is expressed by the equation:

$$Y = -0.4x + 5.0$$

(1914 as origin). Since 1920 the rate has increased 0.3 per 100,000 population, annually. The trend equation for 1920 to 1935 is

$$Y = 0.3x + 3.9$$

(1917 as origin). Among males the rate in 1934 exceeded that of any preceding year since 1909.

*The trends are as follows. From 1911 to 1935:

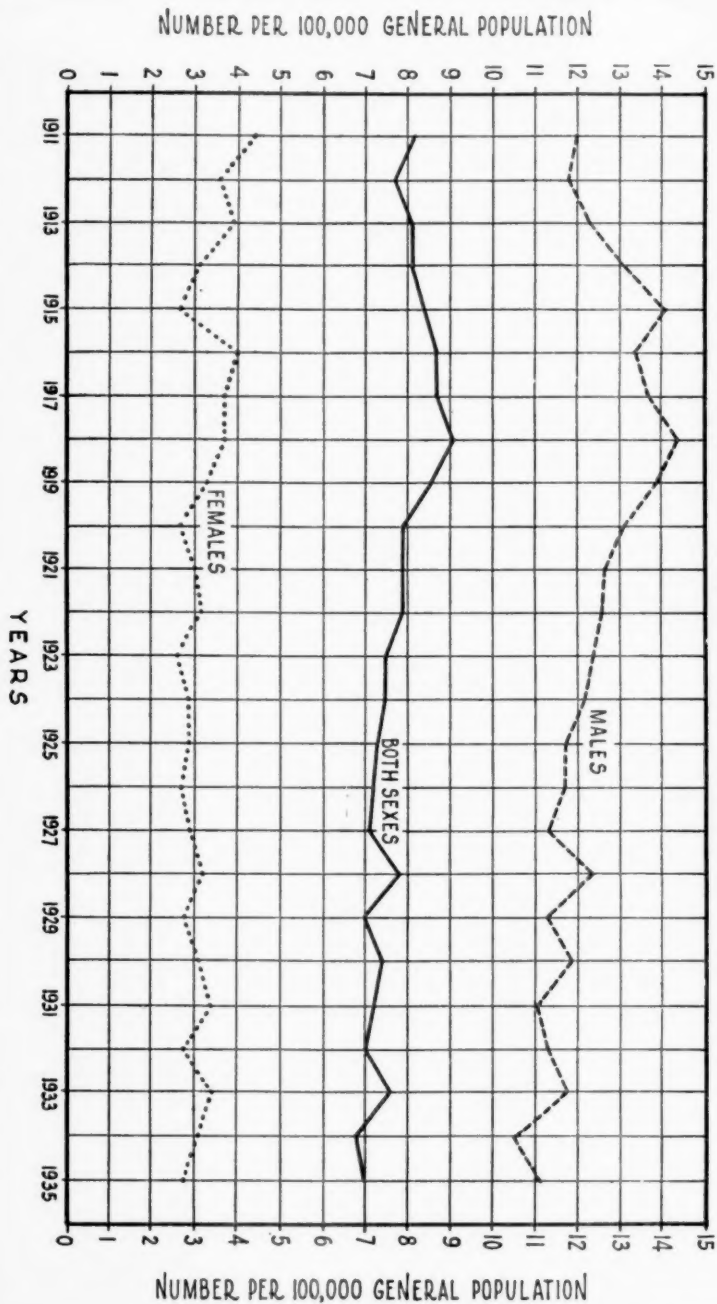
$$Y = -0.06x + 7.7$$

(1923 as origin). From 1918 to 1935:

$$Y = -0.09x + 7.6$$

(1927 as origin).

GRAPH 8 - FIRST ADMISSIONS WITH GENERAL PARESIS TO NEW YORK CIVIL STATE HOSPITALS, PER 100,000 POPULATION, 1911-1935



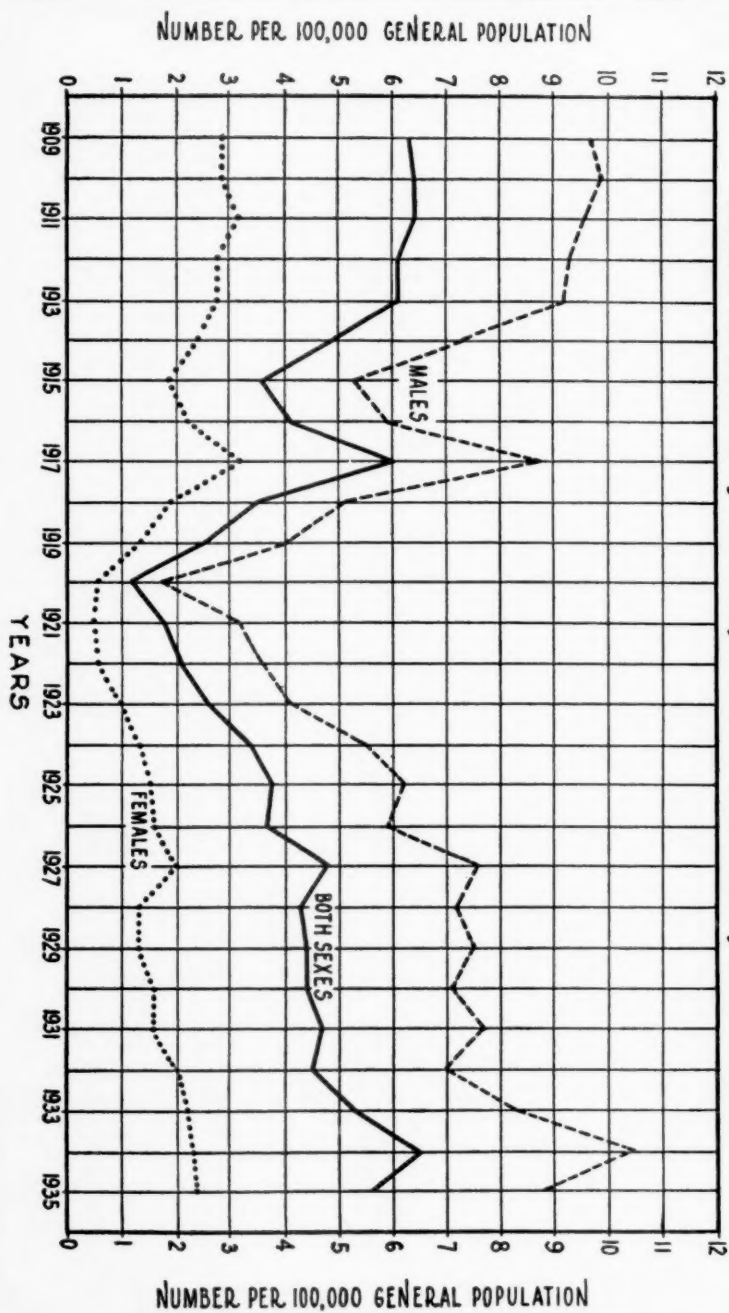
The declining trend began in 1911, before our entrance into the war and prior to the enactment of the eighteenth amendment. There was a speeding up in the rate of decline after 1918. This was undoubtedly due in part to war-time prohibition, and later to good enforcement of the eighteenth amendment. Breakdown in the public attitude, however, has undoubtedly been responsible for the increase since 1920.

TABLE 9. FIRST ADMISSIONS WITH ALCOHOLIC PSYCHOSES, 1909-1935

Year	Males	Number Females	Total	Number per 100,000 general population		
				Males	Females	Total
1909	433	128	561	9.7	2.9	6.3
1910	452	131	583	9.9	2.9	6.4
1911	444	147	591	9.6	3.2	6.4
1912	434	131	565	9.3	2.8	6.1
1913	438	134	572	9.2	2.8	6.1
1914	348	116	464	7.3	2.4	4.9
1915	255	90	345	5.3	1.9	3.6
1916*	215	82	297	5.9	2.2	4.1
1917	437	157	594	8.8	3.2	6.0
1918	257	97	354	5.1	1.9	3.5
1919	204	65	269	4.0	1.3	2.6
1920	90	32	122	1.7	0.6	1.2
1921	167	26	193	3.2	0.5	1.8
1922	194	32	226	3.6	0.6	2.1
1923	220	56	276	4.1	1.0	2.6
1924	302	71	373	5.5	1.3	3.4
1925	341	81	422	6.2	1.5	3.8
1926	333	89	422	5.9	1.6	3.7
1927	440	114	554	7.6	2.0	4.8
1928	430	79	509	7.2	1.3	4.3
1929	459	78	537	7.5	1.3	4.4
1930	446	100	546	7.1	1.6	4.4
1931	497	102	599	7.7	1.6	4.7
1932	462	131	593	7.0	2.0	4.5
1933	556	150	706	8.3	2.2	5.3
1934	724	160	884	10.5	2.3	6.5
1935	620	164	784	8.8	2.4	5.6

*Includes 9 months due to change in fiscal year; rates estimated for 12 months.

GRAPH 9- FIRST ADMISSIONS WITH ALCOHOLIC PSYCHOSES TO NEW YORK CIVIL STATE HOSPITALS, PER 100,000 POPULATION, 1909-1935



MANIC-DEPRESSIVE PSYCHOSES

Rates of first admissions with manic-depressive psychoses are shown in Table 10 and are illustrated in Graph 10.

TABLE 10. FIRST ADMISSIONS WITH MANIC-DEPRESSIVE PSYCHOSES, 1909-1935

Year	Males	Number Females	Total	Number per 100,000 general population		
				Males	Females	Total
1909	161	241	402	3.6	5.4	4.5
1910	234	356	590	5.1	7.9	6.5
1911	224	414	638	4.8	9.0	6.9
1912	293	365	658	6.2	7.9	7.1
1913	291	414	705	6.1	8.8	7.5
1914	254	401	655	5.3	8.4	6.9
1915	278	380	658	5.7	7.9	6.8
1916*	215	387	602	5.9	10.6	8.2
1917	281	552	833	5.7	11.1	8.4
1918	368	608	976	7.3	12.1	9.7
1919	352	652	1,004	6.9	12.7	9.8
1920	285	597	882	5.5	11.5	8.5
1921	356	633	989	6.8	12.0	9.4
1922	383	672	1,055	7.2	12.6	9.9
1923	348	629	977	6.5	11.6	9.0
1924	383	619	1,002	7.0	11.3	9.1
1925	359	691	1,050	6.5	12.4	9.5
1926	388	607	995	6.8	10.7	8.8
1927	392	678	1,070	6.7	11.7	9.2
1928	441	755	1,196	7.4	12.7	10.0
1929	437	765	1,202	7.1	12.5	9.8
1930	453	707	1,160	7.2	11.3	9.3
1931	498	707	1,205	7.7	11.1	9.4
1932	489	742	1,231	7.4	11.4	9.4
1933	548	862	1,410	8.1	12.9	10.5
1934	488	759	1,247	7.1	11.1	9.1
1935	386	656	1,042	5.5	9.4	7.4

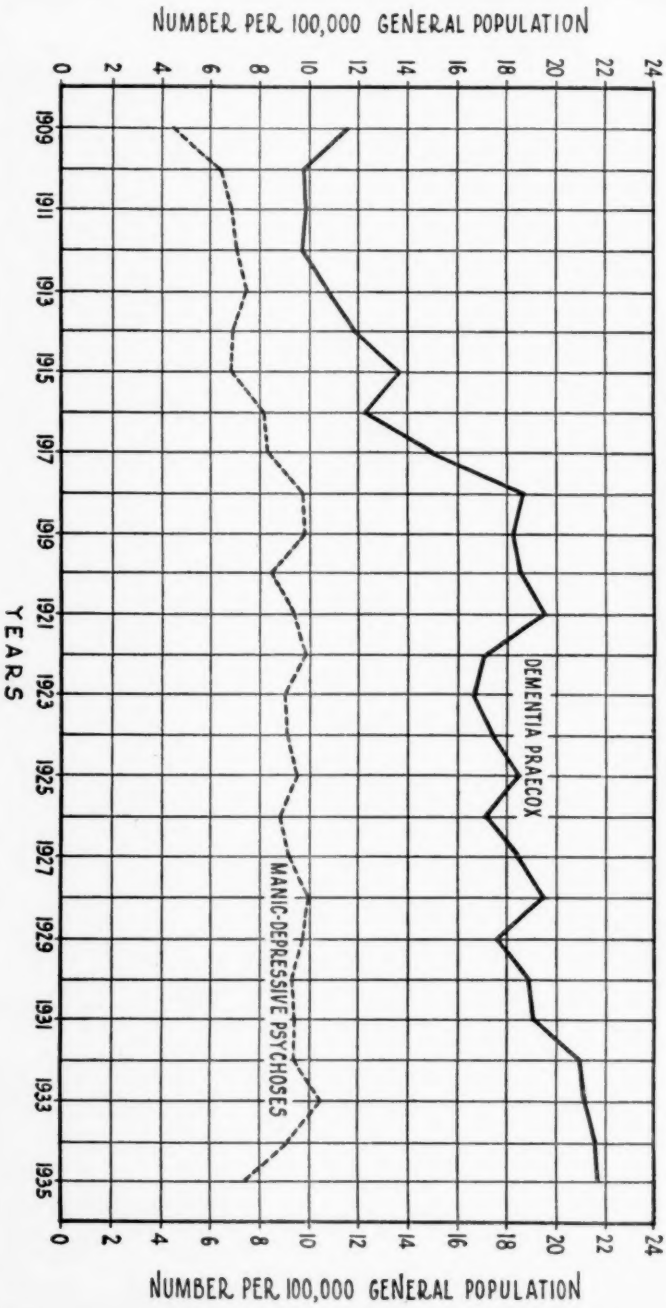
*Includes 9 months due to change in fiscal year; rates estimated for 12 months.

There was a rapid increase between 1909 and 1919. The rate increased 0.4 per 100,000 population per year. The trend equation was:

$$Y=0.4x+7.5$$

(1914 as origin). The rapid increase prior to 1919 may be due in part to changes in the classification of mental diseases. From 1919 to 1933 there was a slight upward trend:

GRAPH 10 - FIRST ADMISSIONS WITH MANIC-DEPRESSIVE PSYCHOSES AND WITH DEMENTIA PRAECOX TO NEW YORK CIVIL STATE HOSPITALS, PER 100,000 POPULATION, 1909-1935



$$Y=0.04x+9.4$$

(1926 as origin), though it is doubtful if this is significant. Since 1933 there has been a drop in the rate. The interval is too short, however, to be significant.

DEMENTIA PRÆCOX

Rates of first admissions with dementia præcox are shown in Table 11 and are illustrated in Graph 10.

TABLE 11. FIRST ADMISSIONS WITH DEMENTIA PRÆCOX, 1909-1935

Year	Males	Number Females	Total	Number per 100,000 general population		
				Males	Females	Total
1909	543	489	1,032	12.2	11.0	11.6
1910	468	427	895	10.2	9.4	9.8
1911	475	436	911	10.2	9.5	9.9
1912	473	446	919	10.1	9.6	9.8
1913	538	483	1,021	11.3	10.3	10.8
1914	592	533	1,125	12.3	11.2	11.8
1915	681	640	1,321	14.0	13.3	13.7
1916*	505	402	907	13.7	11.0	12.4
1917	794	681	1,475	16.0	13.7	14.9
1918	985	898	1,883	19.5	17.8	18.7
1919	1,001	869	1,870	19.6	17.0	18.3
1920	1,004	922	1,926	19.4	17.7	18.5
1921	1,096	953	2,049	20.9	18.1	19.5
1922	1,016	814	1,830	19.1	15.2	17.1
1923	959	852	1,811	17.8	15.7	16.7
1924	1,003	910	1,913	18.4	16.6	17.5
1925	1,068	990	2,058	19.3	17.8	18.5
1926	1,045	901	1,946	18.5	15.8	17.2
1927	1,197	952	2,149	20.7	16.3	18.5
1928	1,261	1,065	2,326	21.2	17.8	19.5
1929	1,174	988	2,162	19.3	16.1	17.7
1930	1,299	1,070	2,369	20.8	17.0	18.9
1931	1,302	1,140	2,442	20.3	17.9	19.1
1932	1,486	1,269	2,755	22.6	19.4	21.0
1933	1,482	1,360	2,842	22.0	20.4	21.2
1934	1,547	1,417	2,964	22.5	20.8	21.6
1935	1,584	1,447	3,031	22.5	20.8	21.7

*Includes 9 months due to change in fiscal year; rates estimated for 12 months.

The rates fluctuate very irregularly. Taking the whole period, 1909-1935, there has been an upward trend. The equation of the trend is:

$$Y=0.4x+16.5$$

(1922 as origin). This, however, is influenced by the very great increase from 1916 to 1918, a result due, in large part, to a change in the classification of mental diseases, which was adopted during the fiscal year 1918. From 1923 on there has been a more regular trend:

$$Y=0.4x+19.2$$

(1929 as origin). That is, there has been an annual increase of 0.4 per 100,000 population since 1923.

DISCUSSION

The mentally ill population, as measured by the patients resident in hospitals for the care of such disorders, has undoubtedly increased, both absolutely and relatively. The ratio of the mentally ill (as thus measured) to the total population is constantly on the increase. This, however, is not a true measure of the increase of mental disease, for the growth is due, primarily, to the excess of admissions over deaths and discharges, so that even assuming a constant annual rate of mental disease, the hospital population would necessarily increase.

The best available measure of the relative prevalence of mental disease is the annual rate of first admissions. We have such rates, however, for only a very short period. In such an interval one must anticipate random changes of various kinds. In order to obtain a good picture of the secular trend with respect to mental disease, we require data that extend over several generations, at least. As such series of statistics are generally lacking, we must limit ourselves to data of the type illustrated by the statistics of the New York State Department of Mental Hygiene, accumulated since 1909. In such a relatively short period, it would be unreasonable, on the whole, to expect very marked upward trends. It has been shown that with the rates of mortality and the rates of first admissions to all institutions for mental disease existing in New York State in 1920, approximately 4.5 per cent of the population would require

hospitalization for mental disease in the course of a lifetime.⁶ We may make the very safe assumption that a century ago the corresponding expectation was lower. Obviously, therefore, the subsequent annual rate of increase must have been very small, which means that the secular trend is rising slowly over a long period of time. Bearing this in mind, and realizing, furthermore, that in any short interval there may be random fluctuations, it seems to me that except for the downward trend in general paresis, and the decreasing rate of alcoholic psychoses from 1909 to 1921, the statistics of first admissions indicate an upward trend in mental disease in New York State since 1909.

How shall we interpret such a trend? A large group of observers still hold that the increase is illusory.⁷ They maintain that the general level of insanity has remained constant, but that the proportion of the insane admitted to hospitals has increased from decade to decade.

The argument will appear clearer if we employ some symbolic reasoning. Suppose that N_{1920} and N_{1930} represent first admissions in 1920 and 1930, respectively; P_{1920} and P_{1930} represent the corresponding general populations. The rates of first admissions are N_{1920}/P_{1920} and N_{1930}/P_{1930} . We have shown that the latter ratio exceeds the former, from which we infer that mental disease has shown an increase during the decade. Against this, it is submitted that neither N_{1920} nor N_{1930} are complete measures of the numbers of new cases of mental disease. The true totals (representing first admissions and unregistered new cases) may be represented by N'_{1920} and N'_{1930} . It is urged that in recent years the differences between N' and N have been decreasing—that is, the number of cases admitted to hospitals for mental diseases represents an ever increasing percentage of the true total of such cases. The ratio of N'_{1920}/P_{1920} may possibly be equal to the ratio N'_{1930}/P_{1930} , whereas the ratio of N_{1930}/P_{1930} is greater than that for 1920 merely because of the greater approximation of N to N' in the former year.

Without an actual enumeration of the total insane in the community in successive decades it is obviously impossible to assess the relative value of the argument of greater approximation. The explanation is not new, however. Unfortunately, it is too old. It was

used by Esquirol more than a century ago, "Why," he asked, "did the number of the insane double in Paris between 1786 and 1813? It has doubled and indeed tripled at Paris, because, since the impulse given by Pinel they have multiplied the means of relief at the capitol; the asylums open to the insane are increased in size and improved in their condition, the physicians devote themselves to this service more especially; better care is taken of the sick, and a greater number are cured. We speak of them with more interest and hope; they are more in evidence; and their life is prolonged."⁸

This argument was summarized a half century later in very similar language by the New York State Commissioner in Lunacy in his tenth annual report, in 1882. He said: "The popular belief is that insanity is increasing at a ratio far greater than that of the normal increase of the population. On the other hand, it is maintained that this increase is apparent and not real, and the following proofs are given, viz.: 1. The tendency is now very strong to place the insane in institutions rather than retain them at home for private care; on this account much larger numbers of the insane are annually recorded than formerly. 2. The insane are also committed to asylums for treatment as well as custody, and hence a far larger number are recorded as insane than during the period when the insane were committed only for custody. 3. The great amount of care which has been bestowed upon the chronic insane for many years has lengthened the lives of this class and thus largely increased the total number of insane living."⁹

At almost the same time, however, this explanation was repudiated by a Senate committee appointed to investigate the condition of the hospitals for the insane in New York State. "This increase of insanity," they wrote, "is out of proportion to the increase of population in all highly civilized countries. Estimates without number have been made to show that this increase of insanity was apparent, not real; that the statistics were deceptive; and that the bringing out of lunatics from poorhouses into asylums when they were registered and counted, and more detailed and careful statistical observations of those who were not in asylums explained this apparent increase. This explanation, which was urged some years

since by various writers, has gradually been abandoned by those who stand highest as authority on this subject.

"It is conceded more and more each year by writers and thinkers on this subject, that the greater care in gathering statistics and providing for the insane does not account for this seeming increase, hence the conclusion that the increase, which the figures show, is out of proportion to the population, is passing into general acceptance among the highest experts."¹⁰

The attempt to attribute the increase in mental disease to extraneous factors, not related in themselves to the actual prevalence of mental disorder, goes back many years, almost to the beginning of public provision for the treatment of the insane. Consequently the force of the argument must be weakened by the very fact of its antiquity. A writer in the *American Journal of Insanity* long ago summed up the weakness. "Note that these influences were for some years previously in operation and must consequently have spent their force by drawing all, or nearly all, cases of lunacy existing at that time within the scope of official cognizance, or to put it perhaps more clearly, the limit of numbers would then have been reached and the ominous word 'increase' which runs through the whole series of official reports from beginning to end, would cease."¹¹ It seems probable, therefore, that though the number of registered cases of mental disease (N) can never equal its true limit (N'), the difference between them must long since have reached a period of stability, so that for practical purposes, we are justified in reasoning as to the relative prevalence of mental disease by a consideration of the ratio of registered cases to the general population.

It is instructive to summarize the history of the question as shown in the annual reports of the New York State Hospital Commission, as a practical illustration of the transformation of opinion with respect to the significance of the upward trend in statistics of first admissions. The commission, first known as the State Commission in Lunacy, insisted that discussions of the incidence of mental disease must rest upon statistics of registered and certified insane. "No statements of real value as to the increase of insanity can have any other basis than statistics of those insane persons who

have been judicially determined to be such. In all other cases the allegation of insanity is mere matter of opinion."¹² The State Care Act of 1890 therefore included a provision to the effect that the commission "must, within one year register in its office all insane persons in custody in every institution within the State at the date of the act, giving sex, name, age, nativity, occupation, etc., also it must register the same and some additional facts concerning every insane person admitted to institutions since the passage of the act."¹³

Such registration had not been completed in time for the inclusion of the statistics in the first report of the State Commission in Lunacy, but the subject of increase in insanity received consideration. The commission wrote as follows: "In the absence of uniform and reliable statistics covering a long period of years, it is impossible to accurately determine whether or not the number of insane persons is increasing proportionately faster than the increase of population. At best, opinions only can be given. There certainly has been a numerical increase of the insane each year for a long period of time. It is doubtful, however, if the ratio of recent cases occurring now is much greater than heretofore, excepting perhaps in that most fatal of all forms of mental disease, general paralysis of the insane . . . ; and while there is doubtless some foundation for the popular belief that the ratio of insanity is increasing in all civilized countries, as a result of conditions peculiar to civilization and which tend to undermine both bodily and mental health, it is quite probable that this increase is to a considerable extent more apparent than real . . . The explanation of this large numerical increase is to be found mainly in the following facts: The steady growth of the population arising from native increase and from the annual influx of foreign immigration with its undue proportion of mentally defective persons, who as a rule, remain within the borders of the State; a better and wider knowledge of the nature of insanity which brings to notice a numerous class of cases of a mild type that formerly were not regarded as proper subjects for care, increasing confidence in the management of hospitals for the insane, together with a growing realization of the fact that insanity is a disease demanding treatment instead of a demoniacal possession to

be regarded with something akin to shame and disgrace, leads the friends of the insane to seek medical advice and treatment for the disease, whereas formerly they tried to conceal its existence."¹⁴

In its third report the commission argued that the highest point in the relative prevalence of insanity had been reached and that the ratio of insanity to the population was on the whole decreasing rather than increasing.¹⁵ The previous increase had been due to the following factors:

1. "The increasing public confidence in the management of hospitals for the insane, which results in the commitment of many cases to their care that formerly were kept at home or in seclusion, elsewhere.

2. "A happily lessening disinclination on the part of the people to seek hospital treatment for their insane relatives on the ground of the stigma or disgrace which they wrongfully fancied would attach to them.

3. "A better diffusion among the lay public of knowledge of the fact that insanity is a brain sickness requiring medical care and treatment, and one that, like other diseases, is susceptible of cure or improvement if taken in time.

4. "A better knowledge among the general medical profession of the nature and symptoms of mental diseases, whereby many cases are diagnosed and committed to hospitals that formerly were not recognized as insane.

5. "The fact that the scope or range of the degree or stage of insanity within which persons may properly and lawfully be committed to a hospital or asylum, has been materially enlarged in recent years."¹⁶

Gradually, however, the commission began to modify its views. In the eighth annual report, the commission wrote very conservatively as follows:

"In previous reports the commission has treated this question somewhat in extenso, and has sought to show that the alleged increase of insanity relative to population, if it be not definitely disproved, at least cannot be regarded as affirmatively established. The facts tending to uphold this contention, that in a given population and on a given course of years, the number of persons becoming in-

sane increases yearly in a more rapid ratio than does the population itself—these facts, whatever seeming or real weight they may have, do not conclude the inquiry; they cover but part of the field which needs to be surveyed before a definite finding can be reached. The causes and considerations which enter into the question in its full scope are not all discernible on the surface; reflection and reasoning are sure to reveal others which, it will be seen, deserve a share of attention. If the basis on which statistics relating to the matter depend for their value, was at all uniform and equally reliable, there might be a greater approximation to the truth, but there is no such basis on which correct comparisons can be instituted. After some years have gone by, and the results of the system introduced and maintained by the commission shall have had time to ripen their fruits of painstaking collection and collation of statistics there will be a much closer approach to the complete comprehension of the subject, at least as regards the State of New York, which alone would warrant any absolute declaration. All that may safely be said now is, that after another year of careful observation, the commission sees no sufficient reason for accepting the common belief that insanity, in the State of New York, is increasing out of due proportion to the normal increase in population.”¹⁷

In 1897 the commission was ready to admit that “it is true that insanity apparently is on the increase, but it has been on the increase simply because no sufficient effort has been made to secure recoveries.”¹⁸ In 1899 the commission admitted that there was an increase in insanity:

“It is interesting to compare the classes making up the admissions to the State hospitals for recent years with those admitted during a period contemporaneous with the passage of the State Care Act. A marked change is observable in the age of the patients admitted. Old or senile cases have increased disproportionately, and in an examination of the classification table it will be seen that senility and chronic forms of insanity, especially secondary dementia or the dementia following organic brain disease, are preponderant.”¹⁹ Here the subject seems to have rested, and no further discussion is found in the annual reports. Evidently it was felt that

the fact of a real increase in mental disease could no longer be doubted.

Closely allied to the previous type of explanation is that depending upon the relation of admissions to institutional capacities. It is sometimes argued that increased admissions are a response to the creation of greater facilities for the treatment of mental disease. Taking the country as a whole, there is undoubtedly much basis for this claim. In many states patients were not received for treatment for the sole reason that provisions for them did not exist. Such is not the case in New York, however. It is certain that for many decades patients committed to New York State hospitals have not been rejected because of lack of facilities. In fact, this attitude is the cause of the well-known overcrowding that existed for many years.

The building program in New York State affords us a good opportunity to check the relation between growth in capacity and increase in admissions. The results of the building program first became apparent in 1925, when the hospital capacity was increased by 841. First admissions, however, increased by only 633. Between 1925 and 1935 the certified capacity grew from 30,837 to 52,855, an increase of 22,018, or 71.4 per cent. If admissions were related to capacity in the manner suggested, then we should expect a corresponding increase in the number. Actually they increased by only 58.3 per cent during the interval. Clearly increased capacity cannot explain the growth in the rate of first admissions.

Recent writers therefore attempt to abandon the explanation of the increase in mental disease as a statistical artefact, due to a more complete registration of the insane. They are willing to admit the upward trend, but attribute it primarily to changes in the composition of the general population. We are told, for example, that the upward trend is due to the fact that the general population is growing older. With advancing age, the rate of first admissions increases. In recent years we are, therefore, selecting our patients from an older population, with the result that the rate of first admissions has tended to mount. In other words, it is suggested that the specific age rates of first admissions have not changed, but that

selection within the general population has brought about an upward shift in the trend.

It is true that the population is aging, and that this process is responsible for part of the increase in mental disease. The process, however, cannot be the complete explanation. In 1909-1911 the average annual rate of first admissions to all institutions for mental disease in New York, per 100,000 population aged 15 years and over, was 82.4. If the population of New York State had been distributed in the same sex and age ratios as in 1910, the average annual rate of first admissions in 1919-1921 would have been 88.0. Again assuming the same age and sex distribution as in 1910, the average annual rate for 1929-1931 would have been 91.7 per 100,000 population aged 15 years and over. In two decades, therefore, the standardized rate had increased 11.3 per cent.

In this connection it is important to examine the data in Table 12, which represent average annual rates of first admissions to the New York civil State hospitals from 1910 to 1934.

The rates in Table 12 represent moving averages, the latter being obtained by averaging the admissions for three years. We may first note that the population under 15 years of age has shown a distinct upward trend in first admissions from 1910 to 1934. Passing to the other extreme of the population, we find that those aged 60 and over have also shown a rising trend during this interval. The rate of increase rose rapidly with advancing age, and was especially marked among those aged 75 years and over. Excluding the extremes of the youthful and the aged, and considering those aged 15 to 59 years, inclusive, we may note that the rates showed an upward trend from 1910 to about 1915, followed by a downward trend lasting approximately to 1926. Since the latter year the rates have advanced rapidly in each age interval. The declining trend from 1915 to 1926 must be attributed in large part to the variations in the incidence of the alcoholic psychoses. Generalizing these data, therefore, we can see that the average increase in rates of first admissions for the entire population cannot be attributed to shifts in age composition. Incidentally Table 12 throws some light on the relation of capacity to the rate of first admissions. If increases in capacity lead to increased admissions, it must also be true that ab-

TABLE 12. AVERAGE ANNUAL NUMBER OF FIRST ADMISSIONS TO NEW YORK CIVIL STATE HOSPITALS PER 100,000 CORRESPONDING POPULATION, 1910-1934

Age (years)	1910	1911	1912	1913	1914	1915	1916*	1917	1918	1919	1920	1921	1922
Under 15	0.5	0.5	0.5	0.5	0.5	0.6	0.6	0.8	0.8	0.9	0.8	0.8	1.0
15-19	31.7	34.5	36.9	40.1	41.6	41.8	40.1	39.3	39.9	39.7	39.3	37.4	36.0
20-24	62.8	64.4	66.6	67.9	69.0	70.2	72.9	72.6	70.4	65.6	65.2	64.2	63.8
25-29	73.8	74.2	74.1	74.2	76.5	80.3	84.0	84.9	85.3	82.4	81.6	78.0	73.8
30-34	81.8	82.3	82.3	83.4	82.5	81.8	85.4	90.1	92.0	87.2	87.3	85.2	82.2
35-39	90.5	91.4	89.6	92.5	93.4	93.4	94.7	96.0	97.5	94.3	94.8	91.8	90.8
40-44	91.5	93.9	96.9	96.7	98.1	100.7	99.6	100.1	99.2	97.2	95.3	92.6	93.4
45-49	99.4	97.4	96.5	98.8	99.0	97.6	97.4	100.1	101.4	97.6	95.6	94.0	94.2
50-54	97.5	98.8	101.1	102.2	103.4	100.2	99.3	102.6	103.6	99.8	95.0	93.1	91.5
55-59	100.9	99.4	104.4	104.1	105.4	104.2	106.6	108.7	106.6	102.8	102.2	101.8	102.4
60-64	106.6	113.2	111.4	114.7	115.0	115.6	116.8	111.2	108.2	108.3	115.1	119.1	117.6
65-69	128.8	127.1	126.8	126.2	122.3	138.6	140.7	152.6	141.6	146.0	144.6	150.7	150.0
70-74	161.6	158.8	167.3	178.5	173.5	177.5	169.6	181.8	174.2	175.0	176.5	187.1	197.7
75-79	187.9	193.4	208.3	199.4	201.0	202.8	222.3	230.6	234.7	224.3	222.1	226.2	240.7
80 and over	220.5	228.2	225.9	220.5	243.5	241.0	262.3	249.7	268.7	299.5	313.9	321.2	321.9

TABLE 12. AVERAGE ANNUAL NUMBER OF FIRST ADMISSIONS TO NEW YORK CIVIL STATE HOSPITALS PER 100,000 CORRESPONDING POPULATION, 1910-1934—(Concluded)

Age (years)	1923	1924	1925	1926	1927	1928	1929	1930	1931	1932	1933	1934
Under 15	1.1	1.6	1.7	1.8	1.7	1.5	1.5	1.9	2.4	2.9	3.3	3.7
15-19	35.4	34.3	33.4	33.1	34.2	35.5	36.9	38.3	40.6	41.4	40.8	39.7
20-24	60.2	59.1	57.5	59.2	59.5	62.7	64.2	65.4	66.1	67.7	70.5	71.2
25-29	69.8	67.5	67.0	67.1	69.1	70.1	72.3	72.1	73.7	75.7	78.1	79.4
30-34	76.7	76.6	76.9	78.5	80.4	79.0	79.4	78.3	82.3	86.6	86.5	85.9
35-39	88.2	89.2	88.2	86.2	85.7	86.3	90.4	88.9	91.1	92.7	96.9	97.1
40-44	91.9	90.9	87.8	90.6	93.2	97.3	97.4	99.6	101.8	103.7	104.6	106.8
45-49	92.3	93.3	91.8	97.1	97.8	101.9	102.4	101.7	107.7	111.5	119.8	121.1
50-54	93.5	92.9	93.8	94.5	101.2	106.2	108.6	109.9	112.4	130.5	125.7	127.6
55-59	101.7	102.0	97.6	100.4	106.6	115.6	117.1	116.7	122.8	131.3	136.4	138.0
60-64	114.2	112.7	114.2	122.4	130.1	136.6	133.3	132.4	132.0	144.0	159.5	170.0
65-69	154.9	152.2	154.0	153.1	161.2	166.0	169.5	168.7	182.1	195.9	208.2	212.8
70-74	195.8	195.3	205.2	210.0	216.0	220.4	233.5	240.9	248.2	270.6	292.8	318.4
75-79	228.4	237.8	253.6	278.7	285.8	297.1	320.5	324.2	344.1	349.1	378.0	407.1
80 and over	329.3	327.8	336.9	356.9	382.5	387.3	409.1	410.6	440.8	467.4	529.4	575.2

*Admissions were for 9 months due to change in fiscal year; rates estimated for 12 months.

sence of sufficient facilities should lead to a reduction in admissions. Yet during the interval 1915 to 1926—when facilities were presumably available in equal degree to every age group—we find that the admission rates for those aged 15 to 59 declined, whereas the rates for those aged 60 and over rose. Obviously the theory that capacity and admissions vary directly with each other is in need of modification.

It is also known that the rate of mental disease is correlated with the degree of urbanization. It is sometimes urged, in consequence, that shifts in the percentage of the urban population may explain the rising trend in mental disease. But such a change in the distribution of the population cannot be the sole factor, for we saw in a preceding section, that the rate of first admissions has shown an upward trend among both the rural and urban populations since 1916.

SUMMARY

The number of first admissions to hospitals for mental disease in New York State per 100,000 general population has shown a rising trend from 1909 to 1935. The increase is especially marked in connection with psychoses with cerebral arteriosclerosis, but most of the other important groups of psychoses also show rising trends. The noteworthy exception is the case of general paresis, which has shown a declining trend since 1918. The alcoholic psychoses declined in incidence between 1909 and 1920, but have risen rapidly since the latter year. It has often been urged that the rising trend in rates of first admission cannot be interpreted as a genuine increase in mental disease, because the number of admissions is affected by varying social policies and attitudes with respect to the institutional treatment of such diseases. The subjects of the changing attitude towards mental disease, and the growth in public provisions for such patients were therefore considered in great detail in the preceding discussion, and it was concluded that the rising trends in mental disease during the past several decades cannot be explained by the preceding factors. Neither is it possible to explain the increase in mental disease as a statistical artefact, resulting solely from changes in the general population with respect to age and urban composition.

I therefore conclude on the basis of the relevant statistical data that there has been an increase in mental disease in New York State since 1909. I cannot, however, subscribe to the views of many publicists, especially radical eugenists, to the effect that mental disease is increasing at a truly alarming rate. The increase is moderate, and must, furthermore, be viewed as part of the general trend extending over many generations. Whether such an upward trend shall continue indefinitely is in large part dependent upon ourselves. We can control alcoholic and syphilitic diseases, if we will only apply well-known principles of prevention. Neither is it outside the realm of reasonable possibility to consider the medical control of arteriosclerotic diseases in the future. A return to a less urbanized existence would also have a favorable influence on mental health. Considering all these factors we may, therefore, conclude that the future picture of mental disease in New York State need not remain sombre. Medical knowledge and enlightened social guidance together hold out to the people of this State the possibility of controlling their own mental health and destiny.

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BOOK REVIEWS

Essentials of Psychopathology. By GEORGE W. HENRY, M. D. William Wood & Company, Baltimore, 1935. 302 pages. Price \$4.00.

A book written for medical students should as far as is consistent with truth, be specific and concrete. What the student looks for, whether it be in a lecture or in a chapter, is a well-defined mental picture which can be fixed in his memory. The author supplies this requirement by frequent reference to actual cases observed by him which are cited at sufficient length to be comprehensible. In its 300 pages, the book covers elements of psychopathology but it is not a textbook on psychiatry. Such topics as personality and constitution, the relation of diseases to personality disorders, personality integration and mental dynamisms might be mentioned to indicate the scope of the book. His presentation of those and other topics is in accord with modern views. The discussion of controversial matter is fairly stated as for example is the debatable subject of heredity versus environment. It is gratifying that someone is calling attention to the unreliability of the *hocus pocus* that has paraded as authentic data with reference to the hereditary transmission of mental defect and disease. In the case of the feeble-minded, the story is gloomy enough without being dressed up with surmise and inference that make up some of the family histories of degenerates in which the record is presumed to be traced to colonial days. What is needed in this field are some authentic family histories where the data are verified by competent medical observers.

When it comes to the consideration of hereditary elements in the transmission of affective psychoses, the subject is found to be vastly more complicated. It is understandable that brains poorly developed in structure and complexity may be transmitted from father to son, but whether the father's moods and temperament can be passed on in like manner is something of a quite different complexion. It is beside the mark to quote examples, as in the Bach family, of musical talent existing in several generations. The capacity for musical appreciation is dependent upon the structure of the ear and its nerve supply and the structure of the auditory centers and pathways. That peculiarity of physical structure unquestionably may be transmitted as was the cleft chin in successive generations of a well-known royal family.

The excellent chapters on personality integration and maladjustment in childhood might as well have been omitted, if we are to be guided by the

statement that when one of the parents is schizophrenic 10 per cent of the children are similarly effected and in addition 35 per cent are psychopaths. What is the use of fighting against an inexorable fate? Fortunately for progress of psychiatry the general tenor of Dr. Henry's book does not support the pessimistic prediction quoted from an authority.

This well-informed psychiatrist is on safe ground until he enters the realm of theology; there he falls into an error when he associates the Mosaic threat of visiting the sins of the fathers upon the children unto the third and fourth generations as aimed against sexual offenses. Reference to Exodus, xx-5, makes it clear that the cruel threat is aimed at idolators, for it is a part of the first commandment. The church has ever been more tolerant of the transgressor of the venial than the mortal sin.

Essentials of Psychopathology can be cordially recommended to teachers of psychiatry and sociology for it is well suited to the professional needs of the latter. Medical students and practitioners will derive from its perusal how mental and psychopathic disorders should be considered, understood and dealt with. A notable feature of the book is a model case history given in considerable detail, covering the anamnesis and catamnesis.

Theory and Practice of Psychiatry. By WILLIAM S. SADLER, M. D. The C. V. Mosby Company, St. Louis, 1936. 1155 pages. Price \$10.00.

Dr. Sadler's experience as a teacher is evidenced by the scope of his earlier writings. His books are numerous and cover a wide field. Among the best known are "The Mind at Mischief," "Protecting Modern Youth," and "The Quest of Happiness," all of these written in a popular vein and prepared for the understanding of lay readers. They have enjoyed considerable popularity.

Theory and Practice of Psychiatry fills a gap in psychiatric literature for it deals with pre-institutional psychoses, cases met in general medical practice and in the mental hygiene clinics as well as by the psychiatrist. The book treats of many subjects not ordinarily included in books on psychiatry which have heretofore been available. Personality problems and the various schools of psychology are discussed in 14 chapters; 23 chapters pertain to the psychoneuroses; the psychoses are treated in eight chapters and the remainder of the book, covering about 250 pages, is devoted to psychotherapeutics. What is perhaps its strongest feature is that it brings together, within the covers of a single book, a treatise not too technical in its presentation which covers the whole field of psychopathology and mental hygiene. Its pages reflect the modern viewpoint of psychiatry,

which Dr. Sadler prefers to call the technique of the "American School of Psychiatry," and which he recognizes as having had its origin in the teachings of Adolf Meyer. "American psychiatry treats all the behavior and thought and feeling of an individual as a real or actual performance, as a personality experience." The author is catholic in his approach to the problems of psychiatry and mental hygiene.

He sees the importance of treating the individual as well as the disorder of which the patient complains. His approach to the investigation of the underlying factors is well stated and instructive. The beginner in psychiatry will read it with profit. The reviewer is inclined to differ with the author regarding the protean causes of neurasthenia enumerated or referred to. They appear more like the stories related by patients than the deliberate judgment of the physician after he has listened to them. Perhaps the author does not intend to imply that sedentary habits, poorly ventilated living and working rooms and overeating are to be seriously regarded as predisposing or exciting causes of neurasthenia, but the wording of the text implies it. He discards Freud's dictum that neurasthenia is fundamentally a narcissistic neurosis but does not support his objection by convincing evidence.

On the debatable topic of influences of heredity in the causation of psychoneuroses, Dr. Sadler does not take a stand which aligns him clearly on either side of the controversy. His discussion of family relationships and adolescent and adult personality problems is thoroughly sound and in accord with modern genetic-dynamic conceptions. What one reads with some surprise is: "but over and above these minor factors heredity is usually the predisposing cause (neurasthenia)." This puzzles the reader, after having encountered, on page 560, the more acceptable statement: "The fact that neurasthenia is not inherited—as such—explains why it so seldom manifests itself until maturity . . ."

The reviewer does not wish to be captious in his criticism; rather it is introduced with the purpose of emphasizing the evolution which has been going on so rapidly and in so many directions in psychiatry in the recent decades that even a single individual may not always be clear when his task is that of studying the present situation. That Dr. Sadler has covered a wide field and presented a difficult and intricate topic admirably, no one would gainsay. His book is one which the student and the social worker can read with profit. His presentation, made as it is in language which can be understood by educated persons generally, makes its reading easy.

Practical Aspects of Psychoanalysis. A handbook for prospective patients and their advisors. By LAWRENCE S. KUBIE, M. D. W. W. Norton and Company, Inc., New York, 1936. 223 pages. Price \$2.00.

Dr. Kubie strives, in this volume, to dispel some of the mist that enshrouds psychoanalysis for the eyes of the layman, and, granting a certain degree of receptivity and capacity for understanding in his readers, it may be said that his book fulfills the purpose. There is no wasting of words, for with an abhorrence of circumlocutions and an ease of expression that ensures lucidity, the author frames satisfactory answers to nearly all the innumerable questions that rain down upon the psychiatrist, and particularly upon the analyst. Such questions emanate from caviling sources, others from pure inquisitiveness, but even the most trenchant deprecator of Freudian doctrine cannot fail to be instructed by this splendid handbook.

The practised psychoanalyst may find points of controversy on which he will differ with Dr. Kubie. There is an unmistakable attempt to standardize both theory and technique, not entirely a fault, but possibly straining the independence of the scientific mind. In a book of this sort, however, more good than evil will be achieved in an approach to orthodoxy, for Dr. Kubie addresses the doubters, the uninformed, even the out-and-out denouncers; psychoanalysis will gain far more repute in the eyes of the public than has been its lot, if there is assurance that it is not a fly-by-night enterprise, if the public is apprised of the strict requirements of training and experience that must precede recognition as a qualified psychoanalyst. The author is to be commended on his statements that any physician cannot be a "psychoanalyst by grace and intuition." Neither has he any patience with the "wandering analyst," who conducts intermittent analyses here and there, leaving bewildered half-analyzed patients in his wake.

Dr. Kubie strikes a good point when he describes the arduousness of an analysis, thereby hoping to discourage the faddists for whom psychoanalysis has the lure of adventure, of a romantic experience. That it is serious business and not a pastime for people with time on their hands, should be emphasized as this author emphasizes it. He says, on page 90, "Whether as therapy or prevention, psychoanalysis can function effectively only for someone who has become convinced of the necessity of the step he is taking, who faces honestly his own neurotic tendencies, who has abandoned the effort to blame his maladjustment entirely on external circumstances, and who comes willingly and on his own initiative."

Two classes of readers will find this book useful: the class described in the subtitle, "prospective patients," and the analyst-in-the-making, who will in time be confronted with the questions so ably answered by Dr. Kubie.

The Cerebrospinal Fluid and Its Relation to the Blood. By SOLOMON KATZENELBOGEN, M. D. Johns Hopkins Press, Baltimore. 460 pages. Price \$5.00.

In his preface, Dr. Katzenelbogen informs us that this work was undertaken to review the works of others and the author's own researches, and to formulate the results thus far obtained, which have too often proved contradictory.

The first five chapters have to do with the origins of cerebrospinal fluid, its formation and circulation, and with the barrier between blood and cerebrospinal fluid. Much theoretical as well as practical material is set forth and a number of issues hitherto obscured are therein made clear. The following statements found in Chapter Four are especially worthy of the laboratory worker's attention:

The concentrations of diffusible blood constituents in the cerebrospinal fluid should be estimated, not as absolute values, but as compared with the concentrations of similar constituents in the blood plasma . . .

Substances which originate partially or wholly in the cerebrospinal cavity should be evaluated as such and not as compared with similar substances in the blood . . .

Chapters Five through Thirteen constitute a discussion of the various constituents of the cerebrospinal fluid, setting forth the normal and the high and low levels. The author follows generally accepted views in this regard. His comparisons of levels of substance in the blood plasma and cerebrospinal fluid in normal and in pathological conditions are of interest and importance.

In the chapter on immunity processes, Dr. Katzenelbogen stresses the facts that antibodies in the cerebrospinal fluid originate from the blood and the cerebrospinal tissues, that the permeability of blood antibodies from the blood to the cerebrospinal fluid varies and does not reach any great rate. Urotropin seems to increase the passage of antibodies from the blood to the cerebrospinal fluid.

Chapter Sixteen presents tests for barrier permeability by elimination of substances introduced into the cerebrospinal fluid by the passage of endogenous and exogenous substances into the cerebrospinal fluid. The author cites the results of the tests in numerous pathological conditions, shows their value as diagnostic measures and gives the range of the barrier in the different psychoses, indicating whether it is normal, lowered or raised.

The remaining chapters deal with factors influencing the barrier function, the artificial alteration of the barrier permeability through changes in the endocrine and vegetative nervous systems, procedures for increasing the barrier permeability for arsenic, and the normal and pathological barrier for bismuth.

The presentation of this difficult and much-discussed subject is clear and complete. Controversial problems are treated objectively. For clinicians, laboratory workers and research students with a specific interest in the cerebrospinal fluid, this volume serves a useful purpose, and serves it well.

For Stutterers. By SMILEY BLANTON, M. D., and MARGARET GRAY BLANTON. D. Appleton-Century Company, New York, 1936. 186 pages. Price \$2.00.

A physician who undertakes to write a medical book to be read by his patients must find himself confronted by serious difficulties of presentation. This is particularly the case when he writes of a psychoneurosis for the benefit of psychoneurotics; how much of the underlying mechanisms must in obedience to the dictates of professional honesty be disclosed and how much may be left unsaid? How much of the former will the lay reader be able to assimilate and apply to his own particular case and will that quantum be sufficient to make the writing of a book worth while? Dr. Blanton from his long experience in talking to his patients has doubtless arrived at what he has found to be a practical and satisfactory compromise. If such a book must be written no one could do it better than the authors, who have been occupied for years with instruction to sufferers from speech disorders, and to the reviewer it seems that the information is best given by means of the spoken word when the patient is under the influence of the teacher. The book, however, will be purchased—and eagerly—by stutterers who do not come under the influence of Dr. Blanton's psychotherapy and will be unable to profit by its study; the result will be disappointment, for the author gives the crux of his treatment in a few words when he says: "It is a slow rebuilding of the psychological life, and many things may assist the patient in this and many things deter him. There is no magic formulae and no way in which the emotional life may be rebuilt in a hurry. It is a matter of growth."

To expect a layman to accomplish this transformation unguided, except by what he can comprehend from his own reading, is to invite disappointment, for says the author with profound wisdom: "Unfortunately most of us do not wish to know the truth about ourselves. We can endure the truth only in very limited and diluted dosages."

Had the book been addressed to physicians with psychoanalytical training it would have been recast; more would have been written of the oral constellation than the mere mention of sucking, chewing, gagging movements in the attempt to enunciate words; more would be said of anal elements in hatred, jealousy and obstinacy.

The fact is, the book is psychoanalytic throughout and the author credits Freud with having made the system of treatment possible, yet he is chary of the term and calls it psychotherapy. Psychoanalysis is psychotherapy, but psychotherapy is not always nor often psychoanalysis. Read this statement of the author's method and its scope: "One is forced to the conclusion over and over again that in order for a person to truly benefit by treatment, he must in reality be treated for the profound underlying causes, and that every energy must be directed to the untangling of the personality difficulties which lie beneath, if the restoration of that person to a happy and useful life is to result." If that is not psychoanalysis then the reviewer is vastly mistaken of what that discipline really is.

Dr. Blanton should give us another book, dedicated perhaps to Dr. Brill, addressed to those trained in the technique of psychoanalysis. He can draw from his wide experience with, and deep understanding of the stutterer and his conflicts, to produce a work which should become a classic in its field.

Sing Sing Criminals. By SAMUEL KAHN, Ph. D., M. D. Dorrance and Company, Philadelphia, 1936. 136 pages + appendix and bibliography. Price \$2.50.

Whether or not Dr. Kahn's group of 275 Sing Sing inmates constitutes a statistically convincing quota is a matter for conjecture. Based on an investigation and study of these prisoners between 1929 and 1930, the social, psychological and physical factors in the lives of the subjects were recorded, and the results presented in tables and charts that seem to offer at least partial answers to many questions that one might ask concerning the background of criminals. There is a dearth, however, of dynamic interpretations of the findings, the author barely touching upon the psychopathological implications. Although the subtitle on the dust cover of the book states that it is a "scientific study of crime in its sociological and mental hygiene aspects, with indications for its prevention and cure," one seeks in vain for these indications. The chapter labeled "Conclusions and Recommendations" merely summarizes the data in the fore part of the book, and the comment is too brief and superficial to carry any weight.

The above observations and one other feature of the work lead to the impression that Dr. Kahn has sought to reach the general reader and the student with limited knowledge of this field. The "other feature" is the glossary of terms provided for the uninitiated. Granted that education of the public is, within certain limits, a laudable purpose, a glossary of terms is worthless if it is not precise. In his attempt to make these words understandable to the lay reader, Dr. Kahn has lost much through the omission of vital words, or the changing of entire phrases. Within the few last months your reviewer has seen three books adorned with glossaries that might better have been omitted. The attempt to reach a wider reading public plays havoc with the accuracy of a work that has its origins in scientific investigation.

These criticisms are not gauged to detract from the worthiness of the author's purpose nor from the extreme care and effort that must have gone into the compiling of the data. A few case histories, some correspondence between Dr. Kahn and various judicial and correctional authorities, the report of an autopsy after electrocution, and samples of intelligence tests and records used at Sing Sing—all these serve to give the reader some insight into modern criminological and penological practice. One obtains a glimpse, not profound but nevertheless instructive, of what is being done to learn the background of the individual who comes into conflict with society. For the beginning student the book merits a brief reading. It will not add to the psychiatrist's understanding of the material involved.

Creative Re-education. By FREDERICK PETERSON, M. D. G. P. Putnam's Sons, New York, 1936. 112 pages. Price \$1.00.

Occasionally there comes to the reviewer a book whose message is so inspirational and whose language so clear, that a new light seems to shine where formerly there were shadows. One might almost wish that Dr. Peterson's little volume had been graced with a title more colorful than *Creative Re-education*, so that it would be read by many for whom such a title represents something quite prosaic. True enough, those charged with the care of the mentally deficient and the mentally disordered know too well how much value lies in creative re-education to ignore the author's illuminating, thought brief, treatise. The scope of this work, however, embraces the experience of all who teach and are taught.

Dr. Peterson maintains that occupational therapy is not to be reserved for the abnormal nor for the convalescent invalid, but for every human being, at any stage in his life. Schools for gifted children are admirable adjuncts to our educational machinery, but are only a partial answer to the

challenge that exists in every individual; some talent lies dormant in everyone and it requires only a suitable contact with a specific environmental situation to set off the spark that will cause that talent to grow into a vital factor in the individual's personality. Educators, then, must not lie in wait to pounce upon some talent that appears accidentally, but, in keeping with the true derivation of the word (*e-ducare: to draw out*) should seek for and discover those talents and point the way to their development. Dr. Peterson's theme is not particularly novel; innumerable writers have insisted that education is not a "pouring in," but a "drawing out"—yet it is unlikely that anyone has expressed the thought in quite the same fascinating way as we find in this book.

A chapter is devoted to the "Life Begins at Forty" theme, with some well-known and some little-known examples of late starts on the road to fame. The purpose behind this is the support of the author's exhortation to the individual to sound out his own capacities, especially some form of self-expression through the Hand.

In the preface, Dr. Peterson states, "Most of my own professional life has been spent in what I call "re-education out of invalidism . . . a kind of reconstruction of personality through a seeking and discovering latent or dormant capacities which most people have but do not know they have, and which, when uncovered, create a new life of contentment, of self-expression, of absorbing interest. Our methods of education do not educe these capacities, but in my opinion tend rather to bury them still deeper in the graveyard of lost talents." The authority with which he speaks of "re-education out of invalidism" is well founded, in his efforts for the Craig Colony at Sonyea, in his influence in the educational field.

Toward the end of the book, the author emits a short salvo against psychoanalysis, stamping it as *destructive* (his italics) in contrast with his *constructive* psychological analysis. The reader should bear in mind, however, that re-education is the fourth principle in psychoanalytic technique, and that an analysis is not considered successful unless this principle has been achieved. One is not to doubt that Dr. Peterson's "application of common sense to the problems" has a far wider use than psychoanalysis, but then it has never been maintained that psychoanalysis was effectual except in certain selected types of cases.

Despite this mild disagreement with the author, the thorough reading of "Creative Re-education" is urged upon educators, psychiatrists, occupational therapists, in fact upon anyone who has been confronted by a problem of adjusting an individual to a situation pregnant with frustration.

The Theory of Social Work. By FRANK J. BRUNO. D. C. Heath & Company, New York, 1936. 646 pages. Price \$4.00.

Textbooks on the subject of social work have not been numerous, the great majority of the material on social work being in the form of short articles found in periodicals. This text, which is practical in a broad orientation course on the theory of social work, will no doubt be used extensively in colleges and universities, particularly as it comes from one who has had long experience in the field of social work both as a case worker and teacher.

The Theory of Social Work is presumably intended for students with a good background in biology, psychology, sociology and economics. It is divided into four parts, the first giving the general situation of social work today, the remaining portions of the book being the bases from which the art of social work has developed. In Part I the author states that social work is one of the striking phenomena of contemporary society, not that the idea of mutual aid which is the basis of social work is a new one, but because social relations have become so complex in modern times that new methods for handling the race-old problems of poverty and defenselessness had to be invented. From this, social work across and in its development has utilized the knowledge acquired in various other fields. In the remainder of the text these contributing fields are discussed.

Part II is devoted to the biological elements and their bearing upon social work. In this division there are chapters on heredity, health immunity and disease, syphilis, social hygiene, alcohol and the endocrines. In considering these chapters one wonders why Mr. Bruno discussed these subjects rather than certain other biological and physiological factors which are a part of the social workers' armamentarium.

Part III is devoted to the psychological aspects of behavior. In this he discusses mental tests, the causes and treatment of mental deficiency emphasizing the social aspects of this problem. Insanity and the psychopathologies are also discussed in this division of the text. The organic bases as well as the functional approach to the treatment of mental illness are treated. The author takes occasion to point out what the functional approach to behavior has contributed to social work. Needless to say this entire discussion is extremely brief considering its importance as a social and public health problem. The treatment of the parole and probation question is not quite adequate. From this discussion the student may readily think of the patient being released because of good behavior rather than as a therapeutic measure, and of the follow-up work of the state hospital or state school being more in the nature of authoritative restraint than assistance in community adjustment.

In Part IV the author devotes several chapters to the discussion of the family and its functions, the community and its aspects in relation to the individual, unemployment and the care of the unemployed, social insurance, social work and social reform, and individual responsibility.

The author has chosen his sources of information carefully and gives a valuable bibliography used in compiling each chapter in the book. The task he has undertaken is a large one and regardless of what he found necessary to omit and on what he placed emphasis, there would naturally be those who disagreed with some of his values.

The mature social worker would prefer to go to the original sources for the material which she needs. The beginning student in social work may find this text rather difficult unless he has a very thorough foundation as preparation. Such a text, however, is needed and Mr. Bruno, from his training and experience, is well equipped to write such a book.

The Science and Art of Nursing. By ELLA L. ROTHWEILER, R. N., et. al. F. A. Davis Company, Philadelphia, 1936. 1172 pages. Price \$3.00.

Forty years ago Dr. Peter M. Wise, than whom there was no more versatile state hospital physician and superintendent, wrote a textbook for student nurses which included in one volume all the theory that was required in the then two-year required course. It had its day but was soon superseded by an armful of textbooks aimed apparently to harass and bedevil the pupils of the two-and-a-half and three-year courses of a later time. They were and are books on formal nursing procedures, treatises on anatomy, materia medica, obstetrics, hygiene and Heaven knows what else but just as well suited to the needs of the medical student as the nurse. Now we have a book that was written to meet the needs of the student nurse and the nurse instructor, and may Allah be praised. More than that it is a book built upon pedagogical principles and which takes pains to point out the correlations between the fundamental sciences of medicine and the related principles and technique of nursing. It takes into consideration the life situations in which a nurse may be called upon to serve and not merely the formal, artificial and stereotyped conditions of hospital nursing. It contains all that is fundamental in the curricula of every approved school and emphasis is laid upon the philosophy of nursing, its practice and procedures, omitting minute details which may well be left to the individual instructor.

Especially to be commended are topics which may be designated as the mental and spiritual aspects of nursing, which most textbooks ignore to dwell upon the physical care of the physical body. That the sick man is a human being as well as a patient is never lost sight of and attention to his

emotional and esthetic well being is constantly kept before the student. The scope of the practical and useful information, aside from the usual nursing procedures and precautions, is extraordinary, ranging all the way from the arrangement of flowers in the sick room and how to correctly send and receive telephone calls to things which should be observed and charted concerning the patient who wishes or is urged by others to make a will.

The Science and Art of Nursing is to be commended as a new departure in nursing textbooks; its plan is in accord with modern progress in nursing as well as with the technique of instruction. It is predicted that it will be popular and will run into several editions.

Principles and Practice of Recreational Therapy for the Mentally

III. By JOHN EISELE DAVIS, B. A., M. A.; in collaboration with Dr. WILLIAM RUSH DUNTON, Jr. First treatise on this subject. A. S. Barnes & Company, New York, 1936.

This much-needed textbook is an important contribution not only in the special field of physical education and recreation but also to educators and many others in the hospital or related rehabilitative service.

The Scientific Book Club of New York includes it on its list of scientific books. It has been copyrighted in England. Dr. Matz, director of research of the Veterans' Administration, refers to it as a much needed textbook, and Dr. Adolf Meyer of the Phipps Clinic, Johns Hopkins Hospital, has written the "Foreword," and states that it is a "helpful guide." This brief mention merely records with grateful appreciation the real contribution it makes to an ever-increasing hospital need.

Dr. Dunton, whose consistent work in the interest of securing a well-balanced program for mental patients, and who has long been an authority on such matters, needs no personal explanatory note at this time except to say that, largely due to his unfailing encouragement and advice, the scientific data presented in this book have been put into such clear, readable form. It is a distinct contribution to the special field of education which is represented, but, more to the point, contains in each chapter a clear-cut picture of what may be accomplished with patients suffering with mental illness.

But of Mr. Davis, not so well known perhaps, it is highly informative to learn that in preparatory work he had specialized in educational psychology as well as in physical training holds a B. A., also an M. A. degree, and besides, has had the honor of having been made a fellow of the Physical Education Association for outstanding contributions to that field.

Not in any instance can it be believed that the writers have deviated from

the truth of the observation of what a well-planned program in "Recreational Therapy" has accomplished with individual cases, nor what they believe it may do if still greater attention is given to the important part recreational therapy may play if properly trained, intelligent directors of the work may be secured for mental hospitals, who are educated and have experience to back their findings. Then, and not till then, will the large population of mentally unbalanced in the hospitals receive the full benefit of the carefully worked-out plans contained in this book.

One page 112, Mr. Davis writes particularly of the regressed patient and of the importance of stimulating the "interest field" and of the re-creation of orderly associations and cooperative relationship. This is one of the strongest points, if not the very strongest, of the entire treatise on "Interest and Effort." (Chapter III.)

In the somewhat extended experience of the writer with mental patients in large state hospitals, there has been fundamental necessity in having patients participate in any physical exercise that will assist in normal physical functioning. This point is not only important; it is vital. It is to be hoped and expected that sometime in the near future Mr. Davis may be able to observe and write about the physical training and recreational activities which are carried on in hospitals where neither age nor sex will have an influence on the findings but will thus have a bearing on regressed states for men, women and children. This, it is hoped, will be undertaken at some future time.

There have been control situations in the Veterans' Facility hospitals that do not exist in other large hospitals, such as sex and age among patients, and, nearly always, there are well-trained assistants. For instance, in State institutions it is often necessary to take on employees as assistants in physical training and recreation who have shown interest in the development of such a division of hospital service but who have not had any formal education or training for the work; and who, under no circumstances, can have knowledge of the educative and understanding techniques of educational psychology but do have a sympathetic attitude toward the mentally sick that is highly desirable. After these employees understand in particular that every effort must be made to replace sordid, unhealthy and filthy habits by helping to create a new situation and to awaken interest in life, it has been observed frequently that they give most valuable assistance in the work, and kindly, friendly encouragement to the patients. Such workers may not understand "Practical Teaching Principles" but they can certainly render more helpful service to patients by studying carefully "Formal and Informal Exercises." (Chapter V.)

One of the very strong features of this book, and one of great value to institutions, is the fact that consideration is given to nurses and attendants, as untrained workers, who are assigned to work in recreation or physical training, and programs for their instruction are presented. Inability to plan ahead the sequence of events—either exercises or games—is due to the great lack of training and practice in theory. Appreciation of the fact that any work of this character is under medical direction, and the responsibility of cooperating with the authorities in the matter, is fully recognized by Mr. Davis, who points out in a very tactful manner ways and means by which a progressive program may be organized. (Chapter IV.)

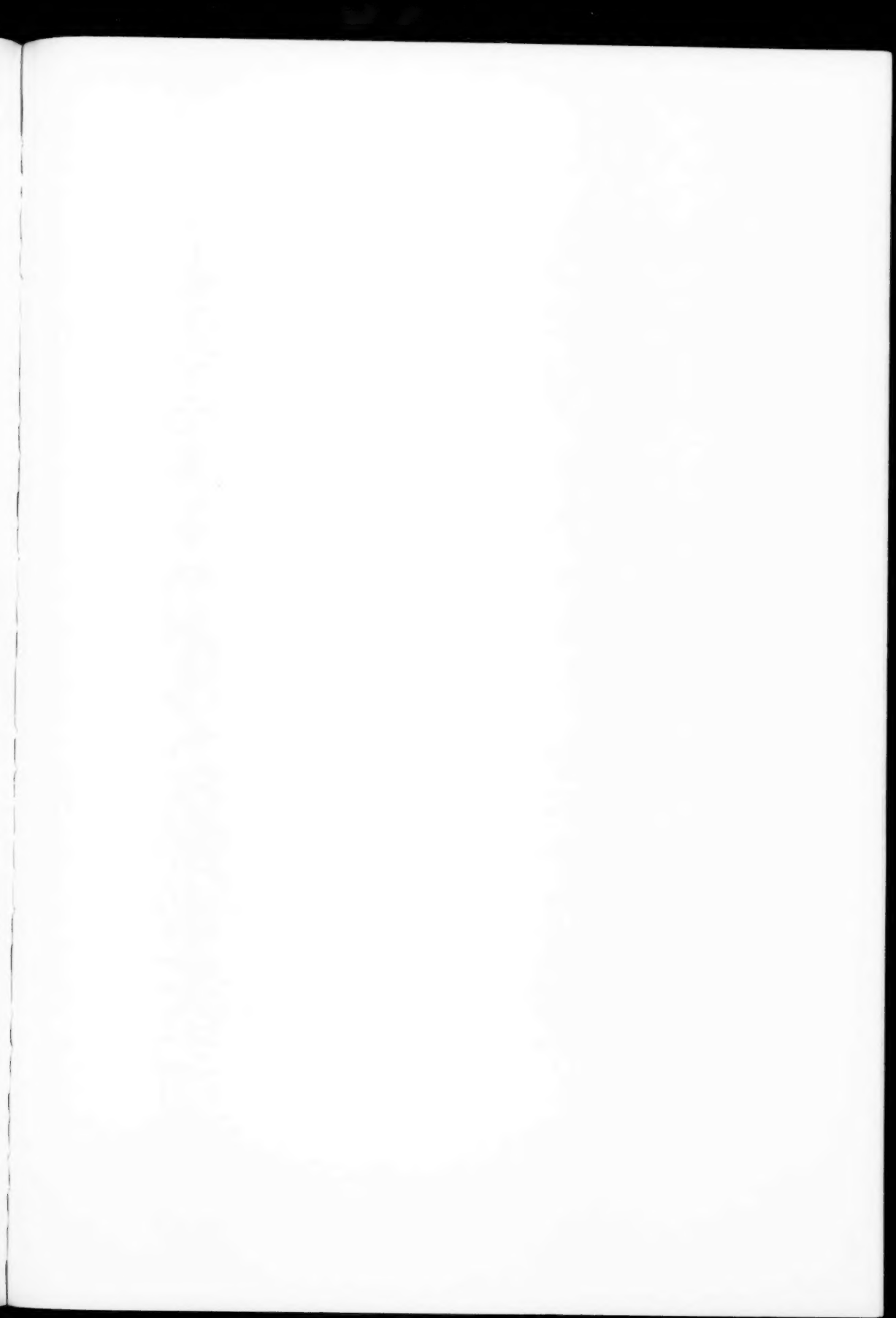
There are also analytical studies and charts worthy of serious attention but best of all are the suggestions for future study presented in several sections of this valuable book, notably chapters II and VII.

The efforts of the collaborators have certainly met with success in that the text is written in a concise manner, emphasizing throughout the deep interest held in the proper practice of "Recreational Therapy." The book should find a place in the library of every public and private hospital, and in all schools and colleges for physical training throughout the country.

NOTES

—June 11 marked the beginning of the duties of the New York State Board of Psychiatric Examiners. This board was established under a new law passed by the State Legislature, which requires that each "lunacy commission" appointed by a court must include a qualified psychiatrist. The board will qualify psychiatrists to examine defendants in criminal trials who plead insanity, and to testify in court proceedings. The members of the board are: Dr. Frederick W. Parsons, Commissioner of Mental Hygiene, chairman; Dr. Lloyd H. Ziegler, Albany, Secretary; Dr. Israel Strauss, New York City, and Dr. Vernon C. Branham, superintendent of the Woodbourne Institution for Delinquent Mental Defectives.

—Dr. Frankwood E. Williams, who was for many years editor of *Mental Hygiene*, died on September 24, aboard the liner Georgie en route to New York. Dr. Williams had injected his vibrant personality and keen judgment into many phases of society in which he foresaw the need for a psychiatric approach. He envisioned the prison of the future as a hospital; he saw delinquency arising from the inadequacies of parents and educators. A graduate of the University of Wisconsin in 1907, he received his medical degree from the University of Michigan in 1912. In 1927 Colgate University conferred upon him the degree of doctor of science. Before coming to New York State, Dr. Williams had been first assistant physician of the Boston Psychopathic Hospital and medical director of the Massachusetts Society for Mental Hygiene. He joined the National Committee for Mental Hygiene in 1917, as associate medical director and was made medical director in 1922. He was editor of the quarterly, *Mental Hygiene*, from its inception in 1917, until his retirement in 1933. Dr. Williams' influence as a teacher was felt in the Yale University School of Medicine, the College of Physicians and Surgeons of Columbia University, the Smith College and the New York schools of social work, and the New School for Social Research. He had been on the executive boards of the Commonwealth Fund and the Milbank Memorial Fund, and of the New York Psychoanalytic Institute. He was a member of many societies and of the editorial board of *Psychopathology*. His best-known publications were: "Adolescence—Studies in Mental Hygiene," and "Russia, Youth and the Present-Day World."





NOLAN D. C. LEWIS, M. D.

NOLAN D. C. LEWIS

On September 1, Dr. Nolan D. C. Lewis assumed his duties as director of the New York State Psychiatric Institute and Hospital at New York City, bringing to the Department of Mental Hygiene the harvest of a wide training and an abundant experience.

Dr. Lewis was born in Potter County, Pennsylvania, on November 22, 1889. In 1914 he received his doctor of medicine degree at the University of Maryland. Graduate studies, including a fellowship in psychology at Johns Hopkins University, and research in neurology and psychiatry in Vienna, have been interspersed with his continuous advancement in his profession. He was married, in 1920, to Anne I. Horn of Baltimore, and they have two children, Nolan, II, and Mary Ann.

His enviable professional career was begun in 1914, when he was pathologist at Maryland General Hospital; the following year he held the same position at the State Hospital for Mental Diseases, Crownsville. Recognition of his qualities gained him the office of director of the laboratories of clinical medicine and associate in psychiatry at the Phipps Psychiatric Clinic, Johns Hopkins Hospital, in 1918, and in this and the following year he was neuropathologist to the Army Medical Museum, Surgeon General's Office, Washington, D. C. Then was begun a long affiliation with St. Elizabeth's Hospital, under Dr. William A. White, where he was successively pathologist, director of clinical psychiatry and director of laboratories. This connection was terminated in 1935, when the National Committee for Mental Hygiene chose him for coordinator in its program of research in dementia præcox, for which activity Dr. White generously loaned the services of Dr. Lewis. Prior to his coming to the Psychiatric Institute, he has been associate medical director of the Neurological Institute in New York City.

Dr. Lewis has held noteworthy teaching appointments at George Washington University, American University, the Naval Medical School at Washington, and the College of Physicians and Surgeons of Columbia University; he is executive officer of the department of psychiatry of the last-named institution.

His publications, chiefly in the literature of pathology, but by no means limited to this phase of mental medicine, have been numerous. Dr. Lewis is a fellow of the American Psychiatric Association, a member of the American Chemical Society, the Association for Research in Nervous and Mental Diseases, the American Neurological Association, the International and the

American Psychoanalytical associations, and of the executive council of the American Genetic Association. The first fruits of his splendid work in the recently inaugurated campaign to advance scientific knowledge of dementia præcox have appeared in an advance study entitled "Research in Dementia Præcox," which will be released by the National Committee for Mental Hygiene on October 15, 1936.

The Department of Mental Hygiene is fortunate in securing for the directorship of its research center, the Institute, a man who has been so alive to the problems confronting the profession of psychiatry, who has demonstrated qualities of leadership in scientific research, and who brings with him a background of sound psychiatric training and experience. The PSYCHIATRIC QUARTERLY welcomes Dr. Lewis, and predicts that he will uphold the prestige established by his distinguished predecessors.

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